

Introduction

Welcome to this interactive exercise booklet which explores the range of careers available in marine protection and management.

This pack will introduce and help you become familiar with just some of the job roles that exist to help protect the ocean around St Helena. It will also outline the skills and qualifications each role requires.

St Helena's MPA is over 440,000 square kilometres in size!

Why do we need to protect the ocean?

Through the natural process of photosynthesis, the ocean produces over half of the world's oxygen that each of us needs to breathe. At the same time, the ocean is absorbing greenhouse gases, like carbon dioxide, which means it plays a significant role in combatting the problem of global climate change.

The ocean is also important for local communities like St Helena and other coastal Territories. In these communities, jobs and livelihoods rely on ocean resources (like fishing and tourism), and therefore ensuring the marine environment is healthy and protected is vital for these marine based economies.

Yet the oceans are threatened by a number of major challenges, both on a global and local scale.

Global climate change is impacting the temperature of the ocean and making it more acidic, which as a result impacts its ability to support marine life. More locally, challenges such as over- or illegal- fishing of fish species can severely impact food security.

The UK Government is helping St Helena to deal with these challenges. They are doing this through something called the <u>Blue Belt Programme</u>.

Illegal fishing includes extracting fish in areas of ocean which are closed to fishing, or a vessel not reporting their catch when they return to shore. An ecosystem is a natural environment and includes the plants and animals that live and interact with that environment. In 2016, St Helena created a Marine Protected Area, or MPA, for the ocean around the island.

A Marine Protected Area is an area of ocean which is managed – according to an internationally agreed set of guidelines – with the aim of ensuring the marine life and natural resources within it are protected for the future. This brings benefits for both the environment (e.g. sustainable fish populations) and the local community (e.g. more jobs for local people).

Each MPA has a set of specific rules and regulations put in place to manage how the area of ocean can be used. For example, these measures might include catch limits on different fish species, outline what tourism activities are permitted, or even close the area for human activity entirely.

St Helena's Marine Protected Area (Category VI) aims to conserve the marine ecosystems, together with the culture and traditions of the island, so it can be enjoyed by future Saints. This means activities like fishing and tourism are carefully managed to ensure the lowest impact on the marine environment.

To make sure a MPA effectively protects the marine environment and supports the local community, a variety of different job roles and skills are needed.

This pack will introduce you to just some of the roles and marine careers that an MPA needs, and the individuals behind them. Each role will also have an exercise activity for you to complete.

If you see this icon T make sure to double click and open up the attachment to help you.



How can we protect the ocean?

Supporting a Marine Protected Area: careers in marine protection

LABS

1.

RRS Discovery

Explore the roles needed to support the creation and maintenance of a **Marine Protected Area.**

Marine Careers

Jamestown

In this pack we'll be introducing some individuals who work within these marine careers. They'll give you an insight into the types of work they do and skills they need.

As you progress through the pack, you'll notice some roles are based on St Helena, while others are part of large organisations which are based abroad.

For each role, familarise yourself with the work they involve by watching the video case study, reading the information, and finally completing the tailored activity.

Start getting to know the roles and individuals below by clicking on the circles!







Marine Scientist

What is a Marine Scientist?

A marine scientist collects and analyses data about the marine environment. This can include a wide range of things (both living and non-living), including assessing key habitats like St Helena's rocky reefs and the behaviour of fish populations. They use this data to establish new findings and conclusions about the health of the marine environment.



Meet Serena, a Marine Scientist for the Blue Belt Programme:



How do marine scientists help create and maintain an MPA?

Marine scientists often work from labs, but can also spend a lot of their time carrying out field work and collecting data from the environment. From the data and specimens they collect, they analyse these to make conclusions about the marine environment.

This information is then used to recommend and inform how the MPA is managed and protected. There are a large range of different specialisms within this role, each with its own focus areas, research techniques and specialised equipment. For example, a fish ecologist focusses on the life cycle and behaviour of certain fish species, while a deep ocean scientist would focus on habitats and marine life in the deep ocean.

Example: A scientist can collect information on the biomass – or the population size – of species of fish. By working this out, scientists can identify the maximum amount of fish – like grouper – that St Helena fisherman can catch, without overfishing them and causing the population to reduce significantly.

Marine Scientist

3 skills needed to be Marine Scientist:

- Analysis skills $\mathbf{\nabla}$
- \checkmark The ability to think critically, by asking questions and making observations.
- \checkmark Problem solving

Essential qualifications:

☑ A university degree in a relative subject, such as Marine biology.

Activity

1. Click the below links and watch the underwater footage captured around the Caribbean (Anguilla, Cayman Islands and Montserrat) and the Pitcairn Islands (Pacific Ocean). These pieces of footage were collected using cameras called Baited Remote Underwater Video Systems (BRUVS).

- Pitcairn Islands footage
- Caribbean footage

2. After watching the footage, investigate the following research questions:

•How do habitats differ in the Caribbean and the Pitcairn Islands? •How many different marine species were visible in the Caribbean compared to the Pitcairn Islands? •How did the abundance of fish species differ between the Caribbean and the Pitcairn Islands? •Which habitat had more marine species, and why might that be?

3. Compile your findings and present them as a simple scientific report. You can use the guidance below to help you:

 Structure your answer so it includes: o the objectives and aims of your report, including the questions you'll be answering o the methods you used to collect and analyse your data o the data you collected for each question o your key findings and conclusions.

- Make clear what your theories and conclusions are, using the evidence you have collected to support them.
- You can present your data in a number of different ways, such as visually (bar graphs for example), or in a table.

• **Bonus**: In your report, can you highlight where the study may have limitations and identify potential future areas for research that might be needed?

Resources to help you:

- How to Write a Science Fair Project Report
- How To Write Science Practicals & Reports



MPA Manager

What is an MPA Manager?

This role oversees all aspects of the Marine Protected Area and works to ensure the overall aims and objectives of the MPA are met.

From managing the budget, engaging with key stakeholders and ensuring the right equipment is in place, this role is key to ensuring all functions of the MPA are working effectively.

Meet Marianne, an MPA Manager for the Blue Belt Programme:



How do MPA managers help create and maintain an MPA?

MPA Managers play a key role in ensuring the effective running of an MPA. An MPA usually has an accompanying management plan, which sets out how the MPA is to operate and meet its goals. This role is responsible for delivering these goals and the work set out in the management plan.

The work of an MPA manager is very varied. It can include hiring and managing the staff needed to make sure the work needed for the MPA is completed, overseeing the budget of the MPA to ensure its finances are well used, or overseeing and organising the delivery of field work and research programmes.

Ultimately the MPA Manager ensures the MPA is running as it should, ensuring both the benefits for the environment and local community are being delivered.

An MPA Management Plan is a document that Governments develop to agree and demonstrate how an MPA will be managed and achieve its objectives.

Manager

MPA Manager

3 skills needed to be an MPA Manager:

- \checkmark Organisation
- $\mathbf{\nabla}$ Relationship building and people skills
- ☑ Communication

Essential qualifications:

A university degree in marine science (e.g. marine biology or oceanography) is useful but not essential.

Activity

One of the goals of the St Helena Marine Management Plan (i.e. what we want the Marine Protected Area to achieve) is: Use of natural resources is managed sustainably, using evidence-based decisions for appropriate management of human activities, aimed at securing economic, food and cultural security for St Helena.

Imagine you're the MPA manager for the St Helena MPA. Pick one human activity (for example fishing or marine tourism). Think about what you and your team would need to do over the next year to achieve this objective and ensure that it is managed sustainably. Write a short plan that sets out:

• What different things need to be done? (think about: monitoring and research; education and awareness-raising; possible management measures for example, permits, zoning or voluntary codes of conduct; writing new laws; compliance and enforcement)

• What do I need to be able to do this? (think about what resources you would need to do this e.g. what equipment you might need and which people you would need to help you) • Who else do I need to involve? (think about other stakeholders that you might need to involve to make this successful)

• When does this need to be done? (think about the order you need to do things in to enable you to meet your objective by the end of the year)

To help you to do this, design a short questionnaire and ask different members of the Marine Section team about the work they do that would help to achieve this objective, what resources (e.g. equipment, budget) they need and who else they work with.

You can present all of your information in the plan here 🕇

Resources to help you:

- St Helena Marine Management Plan: click here
- Information about the Marine Conservation Section unit at St Helena Government: click here



Policy Maker

What is a Policy Maker?

A policy sets out what a government hopes to achieve (its goals) and how it will do this. A policy is not law, but it may be necessary to pass new laws to achieve these goals.

In the context of a Marine Protected Area, a policy maker creates policies that set out the government's view on what activities are allowed to take place within the MPA and how these activities should be managed.

Meet Darren, a Policy Maker for St Helena Government:



How do policy makers help create and maintain an MPA?

Policy makers play an essential role in enforcing the Marine Protected Area. They do this by setting out all of the detail of the MPA, for example the reasons for creating it and the rules it contains for those working within it.

A number of policies will be created to ensure the MPA works as it should and achieves its objectives of protecting the marine environment.

Creating a policy is a long process which involves working with a range of stakeholders – such as fishers, tourism operators and the local community itself - to collect their views and opinions on what is needed from a policy.

A policy maker brings these opinions together, along with the scientific evidence collected by the marine scientist, and other important information, to create a policy. A good policy needs to find the balance between benefitting both the environment and the local community.



Policy Maker

3 skills needed to be a Policy Maker:

- ☑ Communication
- Ability to see the bigger picture $\mathbf{\nabla}$
- Analysis ability to clearly show where and how decisions were reached.

No essential qualifications are required.

Activity

Below is an example of a policy that is in place in St Helena to help protect and enforce the Marine Protected Area:

Example: The Marine Tourism policy for St Helena sets out what tourism activities (e.g. Whale shark watching) are allowed within the MPA, and how these activities should be managed and enforced.

· Come up with a policy idea you think would be useful for protecting and sustainably managing St Helena's marine environment. Write this down below, think about how would your policy ensure the MPA is used responsibly?

• Now you have your idea for a policy, map the stakeholders you would need to consult when researching the impact of your policy. Click the link and map your stakeholders within this table:

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• Write up a more detailed policy proposal for your idea, thinking about:

- a. What is its objective?
- b. Who would it impact and how?
- c. How would you ensure all stakeholder needs are met?
- d. How would you ensure, once your policy is implemented, it is working as it should?

Outline your policy proposal over two pages.





Legislator

What is a Legislator?

Legislators are professionals who help to write, advise on, and pass laws. Legislators often have specialised roles across different parts of the law-making process.

For example a legislator is responsible for the process of bringing new laws into place, otherwise known as 'ratifying' them. Once ratified, the local population have to abide by these laws.

Meet Kimberley, an Advisory Lawyer for the Blue Belt Programme:



How do lawyers help create and maintain an MPA?

To make sure a Marine Protected Area is enforced and recognised by both the local population and internationally by other countries, it is key to turn it and other relevant policies into law. When something is enshrined in the law, it is then compulsory for all those within the boundaries of the Territory to follow the rules.

Any new or updates to existing laws must be guided by government policy. Legislators then work to write these laws and pass them through the St Helena Government. A lot of consultation and evidence gathering goes into writing new laws, or updating existing ones, to ensure they meet the exact requirements needed.

Legal professionals would work closely with other relevant stakeholders around the MPA – such as policy makers - to draft laws so they leave no loopholes and work as intended.

Example: In 2021, St Helena Government passed a new law on fisheries legislation for the island. The new law was designed to help ensure sustainable management and protection of St Helena's fisheries resources into the future.



Legislator

3 skills needed to be a Legislator:

- \square Clear written skills
- ☑ Analytical skills
- ☑ Knowledge of the legal system

Essential qualifications:

 \square A university degree or equivalent in law.

Activity

- 1. Think about why laws are needed in St Helena and for its Marine Protected Area.
- a. What laws are you aware of?
- b. What is the purpose of these laws?
- c. What are the principles behind them?

Carry out some research into what different marine laws exist within St Helena. Make notes about what you find.

2. Once you have found out some more, explore what Saint's know about the laws which relate to St Helena's marine environment.

Create a mini-survey with at least 5 questions and use it to ask members of the public and marine users about what they know about the marine laws of St Helena.

Once you have over ten responses, write up your findings. Aim to include at least two charts to demonstrate and visualise your data.

Resources to help you:

- A general introduction to St Helena legislation: <u>click here</u>
- St Helena's MPA: click here



Marine Enforcement Officer

What is a Marine Enforcement Officer?

A marine enforcement officer protects St Helena's ocean by ensuring those within the Marine Protected Area are following its rules and regulations.

A marine enforcement officer works closely with those who use or work on the ocean (like fishers, or tourism operators) to help them make sure they are compliant with the rules.





Enforcement Office,

Marine

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How do marine enforcement officers help create and maintain an **MPA?**

Marine Enforcement Officers play a key role in ensuring the effective functioning of an MPA. Without them, there would be no way of ensuring the rules set out through the Marine Protected Area are followed. In other words, they give the MPA its 'teeth'!

An enforcement officer uses a number of techniques to make sure those working or using the MPA are complying by its rules. These can range from:

· Educational and awareness raising techniques which ensure people understand what rules are in place and why.

- Organising for individuals to go out with fishers as observers to check their activity.
- Carrying out inspections on vessels that are within the MPA.

To monitor the MPA, enforcement officers often use boats and ribs themselves to survey the marine area. They will also use information from other relevant roles, such as a satellite data analyst (see below for this role!), to get wider information from the MPA and use these to monitor for potential unlawful activity. If they find people breaking the rules, they will then need to address the situation by a combination of education, fixed penalties or fines, and in serious cases prosecution.

Marine Enforcement Officer

3 skills needed to be a Marine Enforcement Officer:

- Ability to know the MPAs rules/regulations and apply them in real-life situations
- ☑ Strong communication skills
- ☑ Integrity and the ability to apply the rules consistently across the board, especially in small communities.

No essential qualifications are required.

Activity

Getting to know the tools used by Marine Enforcement Officers.

Marine Enforcement Officers use a number of methods and activities to ensure those within the MPA understand and comply with its rules and regulations.

It is your task to find out more about these tools and areas of work, and to explore how they support Enforcement Officers to do their work.

Three of these are listed below:

- Fishing logbook
- St Helena fishing licence
- Fisheries observer

For each of the above:

(i) conduct some research to find out more and make notes (ii) explain the purpose for the tool/or activity, and (iii) outline how it supports the role of a Marine Enforcement Officer.

Resources to help you:

- What is Illegal, Unreported and Unregulated (IUU) fishing?
- St Helena fishing licence system
- Fisheries Observers







Satellite Data Analyst

What is a Satellite Data Analyst?

Photos taken by satellites in space can be used to monitor areas of ocean to assess the different marine activities that are taking place at that time.

This is the job of a satellite data analyst, who examines the large amount of data collected by satellites and use it to monitor for potential unusual or unlawful activity.



Meet Louise, a satellite data analyst for the Blue Belt Programme:



How do satellite data analysts help create and maintain an MPA?

Marine Protected Areas are often very large in size. Because of this, knowing exactly what human activities are taking place within this area of ocean is a huge challenge.

A satellite data analyst helps combat this challenge. They can assess images of ocean taken from space, and identify different human activities taking place within it. This is a valuable tool for increasing general awareness relatively quickly of what is happening within large sections of remote ocean.

This is particularly useful for monitoring for potentially illegal activity, and allowing near time data to be collected on where and when this activity is taking place. Enforcement officers can then use this to prevent or stop this activity.

Example: A fishing vessel is catching fish in an area of the MPA which is closed off for fishing. This has been spotted on images taken by satellites, and reported to enforcement officers. Enforcement officers can use this data to visit the location in question, and inspect the suspect vessel.

Satellite Data Analyst

3 skills needed to be a Satellite Data Analyst:

- ☑ Analytical skills
- ☑ Eye for detail
- ☑ Team work

No essential qualifications are required.

Activity

With an annual budget of £500,000, you must complete a surveillance plan for the St Helena MPA using a combination of remote sensing and on-the-ground tools used by the Blue Belt Programme. Only use the tools you think are most suitable, you do not need to use them all. Each tool has its own strengths, weaknesses, and costs, and you will need to consider these to design the most suitable surveillance plan within your budget.

Scenario: There are three groups of fishers in the St Helena MPA: the inshore fishery, the offshore fishery, and illegal fishing boats from neighbouring countries. The inshore fishery targets species such as grouper and lobster within 30 nautical miles of the island. The offshore fishery mainly targets tuna species around the seamounts and takes place year-round. Commercial fishing boats from other countries sometimes fish illegally within the MPA using longlines to catch tuna and shark at the edge of the MPA and especially around Cardno Seamount (330 kilometres from St Helena). The risk is highest between April and July.

Find out what tools are available and complete your surveillance plan here:

Resources to help you:

• Marine Traffic online tracks all vessels around the world. Which boats are currently around St Helena?







Communications Officer

What is a Communications Officer?

A communications officer is responsible for coordinating the external voice and presentation of the MPA.

This role uses a number of communications channels - like newspapers or social media - to communicate key developments and messages to different audience groups on island.



Meet Keara, a communications officer for the Blue Belt **Programme:**



How do communication officers help create and maintain an MPA?

An MPA affects a number of people in different ways - these people need to know how, and why. A communications officer will help ensure stakeholder groups - like fishers and marine tour operators understand the reasons for why an MPA has been put in place, and are kept informed of key developments.

This is vital, as it is only through the cooperation of these groups that the MPA can operate as it is meant to.

Through news stories, social media updates and visual communications such as videos, the benefits of the MPA can be communicated and outlined. This ensures that the local community know why the MPA is in place, what it does and the benefits of it for the community.

Example: Scientists have found that whale sharks are returning to St Helena in higher numbers since the MPA was established. This means more potential for responsible tourism operators. News of this was communicated through channels like newspapers and local events to raise awareness and highlight MPA benefits.

Communications Officer

3 skills needed to be a Communications Officer:

- ☑ Strong writing and presentation skills
- Ability to identify a good story
- ☑ Good digital skills

No essential qualifications are required.

Activity

The designation of St Helena's Marine Protected Area is about to be announced. Once in place, the new MPA will change the way the ocean around St Helena is managed and looked after. These changes will have a big impact on the local community and marine users, like fishers.

As a Communications Officer, it is your task to raise awareness of St Helena's MPA amongst the population of St Helena. They need to know:

- What is an MPA and why is it being put in place?
- What specifically does the St Helena MPA do? E.g. how big is it, what does it change?
- What does it mean for the future of St Helena and its marine environment?

As part of your communications campaign to increase awareness, content is needed that will help raise awareness amongst the local community. Types of communications content can include:

- · An informative video that outlines key messages
- · A newspaper article which breaks the news to local people.
- A visual poster that could be put in public spaces across St Helena
- · Social media posts that are short, catchy and deliver your key messages in less than 50 words.

Create three pieces of different content that could be used to raise awareness of the new St Helena MPA.

Resources to help you:

- Find out more about MPAs: <u>click here</u>
- This website will tell you more about the St Helena MPA: click here



Data Manager

What is a Data Manager?

During the wide range of different work activities that take place across Marine Protected Areas, a huge amount of data is also inevitably collected.

A data manager works to ensure the data collected is stored in an effective way, which is accessible and easily managed.



Meet Devlin, a data manager for St Helena Government:



How do data managers help create and maintain an MPA?

Data is essential for informing how an MPA is managed, and if it is working as needed. A wide range of data is needed, from scientific information on the condition of fish populations, to data on the enforcement of the rules of the MPA, such as the number of cases of unlawful activity.

A data manager ensures the data collected is stored in an effective and accessible way. Storing and tagging data (using metadata for example) efficiently is important, as it reduces chances of data being lost, and makes sure that those who need a specific data-set can access what they need.

Poor data management can lead to decisions being made without knowledge or analysis of the full range of evidence available, which can impact the ability of the MPA to work as it should.

Importantly, data also needs to be stored in the correct way that meets data management laws and regulations (i.e. making sure the data is protected and only accessible for those who have permission).

Data Manager

3 skills needed to be a Data Manager:

- ☑ Attention to detail
- ☑ Digital skills computer literacy
- ☑ Confidence in public speaking

No essential qualifications are required.

Activity

Using the data collected and analysed during the activities for the Marine Scientist and Lawyer roles, complete the standard St Helena Government metadata forms.

Find the Standard St Helena Government metadata form here: ig 4

Think about how these types of data need to be stored, why they are important, and how the metadata you are inputting will help.

What is data?

A piece of data is an individual item of information or fact, which is collected together for analysis and research. Data can be a huge range of things, from personal data (names, addresses etc.) too scientific data (fish populations etc.)





Marine Engineer What is a Marine Engineer?

An engineer is someone who designs, builds, or maintains machines or structures. A number of machines and pieces of technology – like boats, cameras and scientific equipment – are needed to maintain a Marine Protected Area.

It is the engineer's role to ensure these work as they need to, allowing the necessary work and research on a Marine Protected Area to be undertaken.

Meet Rodney, a marine engineer for the Blue Belt Programme:

Engineer



How do marine engineers help create and maintain an MPA?

Engineers are key to ensuring the work that is required to collect information about an MPA and to enforce its rules is completed. A large range of equipment and technology are needed for an MPA to achieve its purpose – from enforcement technology like drones, to scientific research equipment like deep water cameras.

An engineer is essential to ensuring these work as they should, and carry out crucial functions to the maintenance of the Marine Protected Area. Engineers are often particularly needed on large scale projects such as marine expeditions and research surveys, as a lot of specialised equipment is needed to complete these.

Example: In 2019 RRS Discovery (DY100) came to St Helena to carry out a survey of the MPA to ensure managers and scientists could collect new information and data. Expeditions like DY100 require a large range of equipment, for example, underwater cameras, winches to move large equipment and small boats. A marine engineer is needed to operate and maintain these pieces of equipment.

Marine Engineer

3 skills needed to be a Marine Engineer:

- ☑ Practical and hands on skills
- ☑ Problem solver
- ☑ Perseverance

Essential qualifications:

☑ Engineering (there are multiple specialisms available) degree, or equivalent experience through apprenticeships for example.

Activity

1. Choose two pieces of equipment or technology in the St Helena Marine Section that are needed to support an MPA. Once you have chosen two, conduct some research into what their purpose is and how they are used. **Make notes on what you find.**

2. Look for two other products outside of the marine unit that are used on a larger scale for marine purposes (e.g. a winch on the dockside). **Conduct research and make notes on what you find.**

3. Create a three page case-study based report which outlines your findings on the four pieces of equipment you have researched. For each case study, consider:

a. How they compare and contrast to other pieces of equipment.b. What are the benefits and limitations of each piece of equipment?c. What additional resource or cost would be needed to use the equipment?

Resources to help you:

More information on Marine Engineer roles: <u>click here</u>

Examples of technology and kit maintained by engineers:

- <u>Wave Glider</u>
- <u>CTD instrument</u>
- <u>Argo floats</u>
- Fixed moorings for environmental monitoring
- <u>Manta trawl net</u>





Do you think you'd enjoy a career in any of the marine roles outlined in this pack?

If so, don't hesitate to ask the St Helena Marine Section for more detail about how you can get involved and build the skills needed to reach these roles.

Regardless of the career journey you take in the future, it is important to remember that we all have a role to play when it comes to protecting our oceans. Each of us needs to be responsible stewards of our oceans to ensure they ocean remain healthy and productive for future generations.

Quickfire Quiz:

How many of the roles have you learnt about so far?

Once you have learnt about and completed the activity for each of the roles above, discuss what you have learnt with other students or a member of the St Helena Marine Section. Use the questions below to guide your conversation.

- 1. What is a Marine Protected Area (MPA)?
- 2. Why is protecting the ocean so important? Give two examples.
- 3. How does a marine scientist help protect an ocean environment?
- 4. What does the job of a satellite data analyst involve?
- 5. Why is it important to store data correctly and efficiently?

6. Name two job-roles that are important for ensuring the rules of a Marine Protected Area are abided by.

7. What communication channels might an MPA Communications Officer use to inform St Helena citizens of a new announcement?

- 8. How does a marine engineer help to ensure an MPA can function as needed?
- 9. Why are policies needed when creating and maintaining an MPA?
- 10. What was your favourite role, and why?

For more information about work taking place in St Helena:

Web: <u>www.sainthelena.gov.sh</u> Facebook: <u>www.facebook.com/GOASHT</u> Twitter: @GO_ASHT

For more information about the Blue Belt Programme:

Web: www.gov.uk/government/publications/the-blue-belt-programme Email: <u>Bluebelt@cefas.co.uk</u> Twitter: @UKGovBlueBelt