

# Small-Scale Responsible Fisheries Workshop



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**You hold the future of  
South Africa's Fisheries in  
your hands**

## Chapter 1: Introduction

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### Our Changing World

Have you noticed any change in fishing/weather/environment/life/eating fish/selling fish?

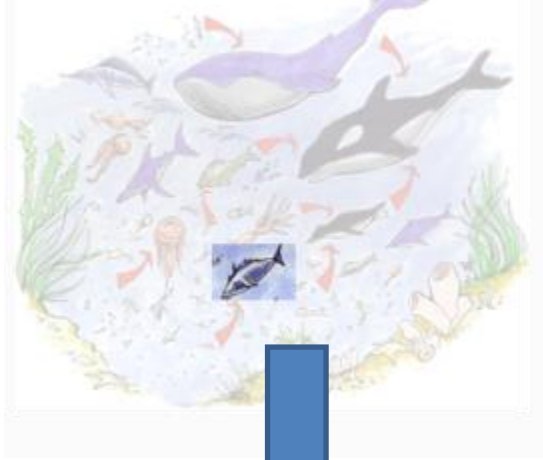
THEN:

NOW:

The world is changing and so are the ways fisheries are managed.

# Then:

## Single species approach



# Now:

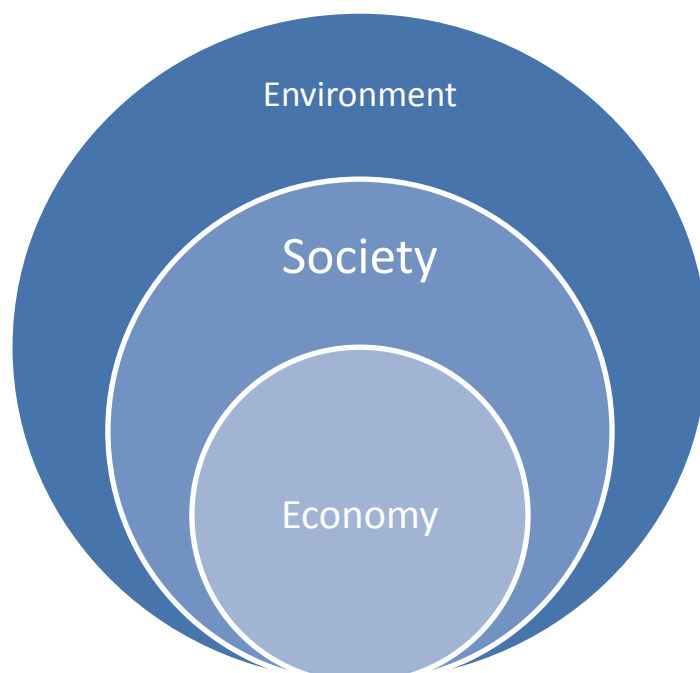
## Ecosystem Approach



## Ecosystem Approach to Fisheries

Ecosystem Approach to Fisheries is a management approach which seeks to protect and enhance the marine ecosystem health as a whole, on which life and human benefits depend.

It is based on a transparent and participatory management system which tries to look at ecosystem health, different social needs, and economic development, and aims to address the shortfalls of the single species approach.







The pictures above show an example of how an Ecosystem Approach would work, from the Rock lobster industry in Australia.

Rock lobsters live in kelp forest beds and feed on urchins. Urchins feed on kelp. But rock lobsters were overfished, so there were fewer urchins eaten. This resulted in an increasing numbers of urchins.

**What do you think happened to the kelp forest ecosystem?** The urchins eat all the kelp and leave bare rocks.

This barren ground gives little food and protection for a large number of fish species, including commercially important line fish.

We need to consider all the impacts on the ecosystem before making decisions about how many lobsters we can take. This would then be an example of an ecosystem approach to fisheries.

**Exercise:**

Based on the story discussed on the Ecosystems Approach to Fisheries, link the three following pictures and discuss what would happen if one of these three were removed from the system.



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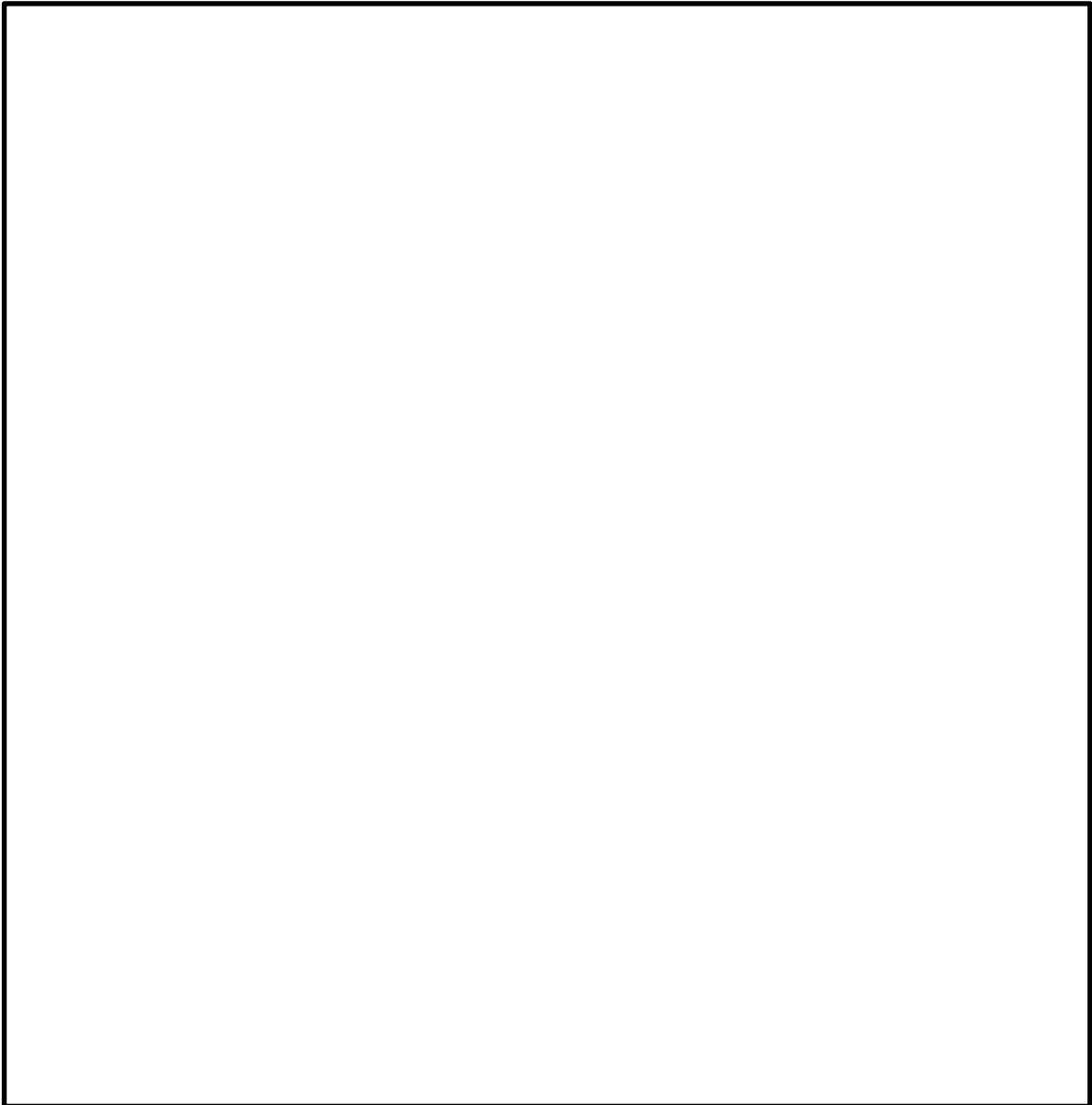
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## Chapter 2: Ecological and Community Health

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### South Africa's Fisheries





- \* How many fisheries do we have in South Africa? (See pages 30 and 31 for suggestions)

A large, empty rectangular box with a black border, intended for students to write their answers to the question about the number of fisheries in South Africa.

- \* Underline the fisheries that occur near your community



## Large Industrial Fisheries:

<p><b>Small pelagic fish (sardine and anchovy)</b></p> <ul style="list-style-type: none"> <li>• Small schooling fish caught in a purse seine net</li> <li>• Found in large schools</li> <li>• Catch about 450 000t per year</li> <li>• Feed on very small animals</li> <li>• Found within 200m of the sea surface</li> <li>• Their population numbers fluctuate dramatically from year to year</li> </ul>	
<p><b>Hake</b></p> <ul style="list-style-type: none"> <li>• Caught by demersal trawl, demersal longline and handline.</li> <li>• Catch 150 000t every year.</li> <li>• Start feeding on krill (tiny animals in the sea), then move onto small fish then larger fish (hake, horse mackerel, lanternfishes, squid etc.)</li> <li>• Lives on the bottom on the ocean during the day, comes up during the night to feed.</li> <li>• Hake trawl is certified as sustainable by the Marine Stewardship Council, which a sustainability standard.</li> </ul>	 
<p><b>Large pelagics (tuna and swordfish)</b></p> <ul style="list-style-type: none"> <li>• Marine top predators caught by pelagic longline and pole-and-line</li> <li>• They eat whatever is available.</li> <li>• They live in the open ocean.</li> <li>• Can live to 30 years old and are very vulnerable to overfishing. Order of most vulnerable to least: bluefin, big eye, yellowfin, albacore.</li> </ul>	

## Small-Scale Fisheries in South Africa



### WEST COAST

- Rocky Shore intertidal limpets
- Bait worm
- Mussels
- Winkles
- Rock Lobster
- Abalone
- Redbait
- Kelps and seaweed
- Mud/sandprawns
- Bivalves
- Fish (gill/seine net)(marine & estuarine)
- Fish (rod and reel)



### SOUTH COAST

- Limpets
- Bait worm
- Mussels
- Oysters
- Winkles
- Rock Lobster
- Abalone
- Octopus
- Redbait
- Kelps and seaweed
- Prawns
- Benthic bait
- Crabs
- Bivalves
- Fish (rod and reel)

### EAST COAST

- Limpets
- Bait worm
- Mussels
- Oysters
- Winkles
- Rock Lobster
- Octopus
- Redbait
- Kelps and seaweed
- Prawns
- Benthic bait
- Crabs
- Fish (gill/seine net)(marine & estuarine)
- Fish (estuarine trap)
- Fish (rod and reel)



Circle the fisheries that are used by both small scale and commercial fisheries

## South Africa's Marine Life

In Southern Africa, our oceans support a large number of animals that don't occur anywhere else, including the Cape Gannets, African Penguins, Heavyside Dolphin, Steenbras, Musselcracker and many others.



### TURTLES

- \* Turtles have been around for **over 200 million years**.
- \* Loggerhead turtles take about **30 years** to reach an age where they can breed.
- \* They **come back to the same beach where they were born to nest**.
- \* Only **1 to 2 in every 1 000 young will survive to become adults....** This makes them a **VERY VULNERABLE** species!

### AFRICAN OYSTERCATCHER

- \* Males have blunter shorter beaks.
- \* Feed on **mussels and limpets** – using their strong beaks to open the shells.
- \* Lay **1 or 2 eggs** from October to April (mainly Dec – Feb).
- \* Live for over **18 years!**
- \* Classified as **Near Threatened**.



### WHALES AND DOLPHINS

- \* Southern Right Whale is **10x the size of an elephant**.
- \* **Baleen or toothed** whales.
- \* Use **eco-location** to navigate.
- \* Some travel **long distances**.

## SEALS/ROBBE

- \* The Cape fur seal is the **only seal that breeds in southern Africa.**
- \* A male seal can have a **harem of up to 20 females.**



## GANNETS/MALGAS

- \* Dive from 30m to hunt fish at **100km/h.**
- \* They have **air sacs in their face and chest** under their skin like bubble-wrap

## SUNFISH

- \* Weighs up to **2000kg!**
- \* Produce up to **300 million tiny eggs.**
- \* Sunfish eat Jellyfish!



## PENGUINS

- \* The African Penguin is also known as the **Jackass Penguin** because they sound like a donkey.
- \* They mate for life and return to the same colony to nest each year.
- \* This is the **only penguin in Africa** and only occurs in Namibia and South Africa.
- \* The oldest African Penguin in the world is 27 years old.



## ALBATROSS

- \* Their wingspan can be **3.5m**.
- \* Found **only in the Southern Hemisphere**.
- \* Lay **one egg each year**.
- \* **Only mate with one partner**.
- \* Live up to **60** years old.
- \* They can fly very far to look for food – more than **1000km a day**.



## SHARKS

- \* Some sharks can live to **100 years**.
- \* They grow very slowly.
- \* There are 36 species of shark in South Africa which are **threatened by extinction**.
- \* They **replace their teeth every 8 days**.



## OCTOPUS

- \* Very **clever**
- \* **3 hearts**
- \* **No bones**
- \* Blood is **blue**



## CORALS

- \* Coral is an **animal**
- \* Some **glow in the dark**
- \* More than **2000 coral reefs** in the world
- \* Baby coral is **smaller than a pin head**

What other animals do you see when you are out fishing and do you know anything interesting about them?

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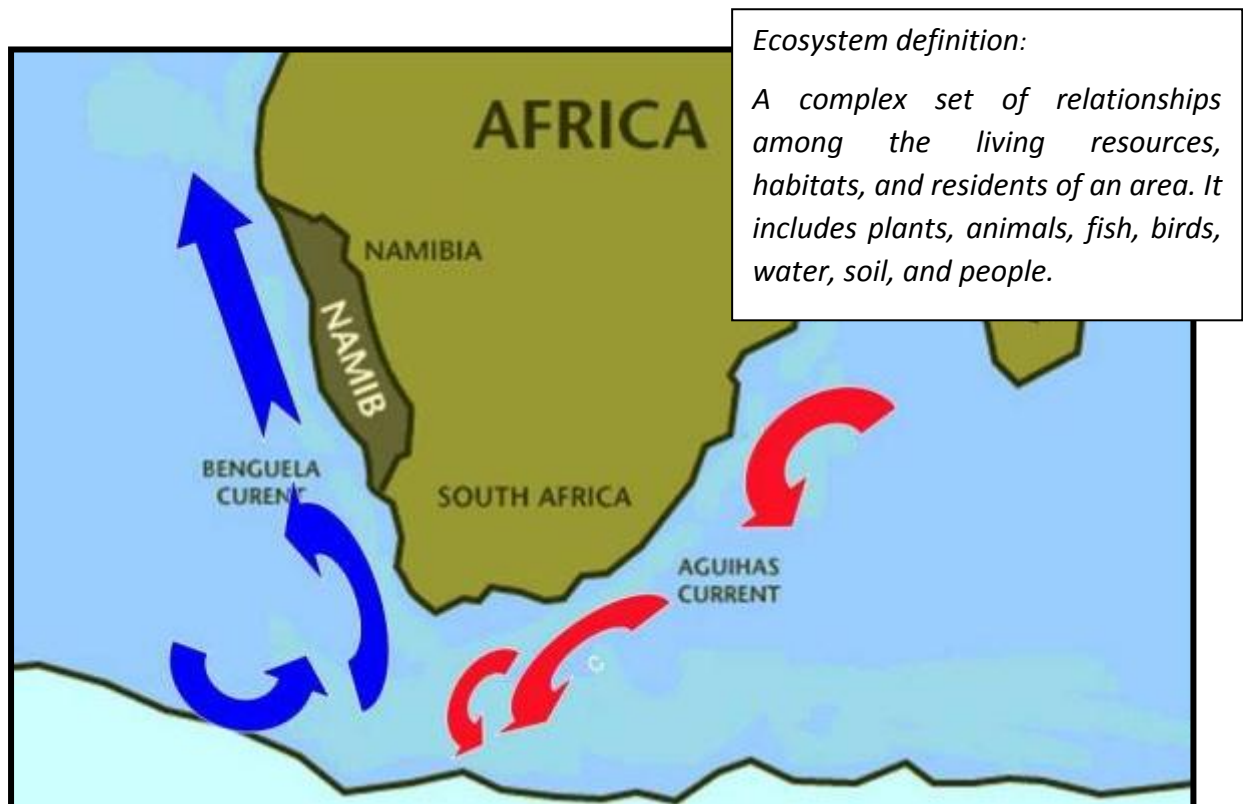
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## South Africa's Marine Ecosystem



Different marine environments contain different kinds of sea life. We find very different fish stocks on the West and East coast. The West coast has the cold Benguela current which brings nutrients up from the seafloor as food for the fish. So there are few types of fish on the West coast but there are a lot of each type of fish.

On the East coast, there is the warm Agulhas current and there is less food for the fish. This results in many different types of fish but less of each type.



On the South coast, the two currents meet. Here there is cooler water inshore and warmer water offshore. Here you find animals from both sides of the country and some special ones that only occur in this region.

## COLD BENGUELA CURRENT



## WARM AGULHAS CURRENT

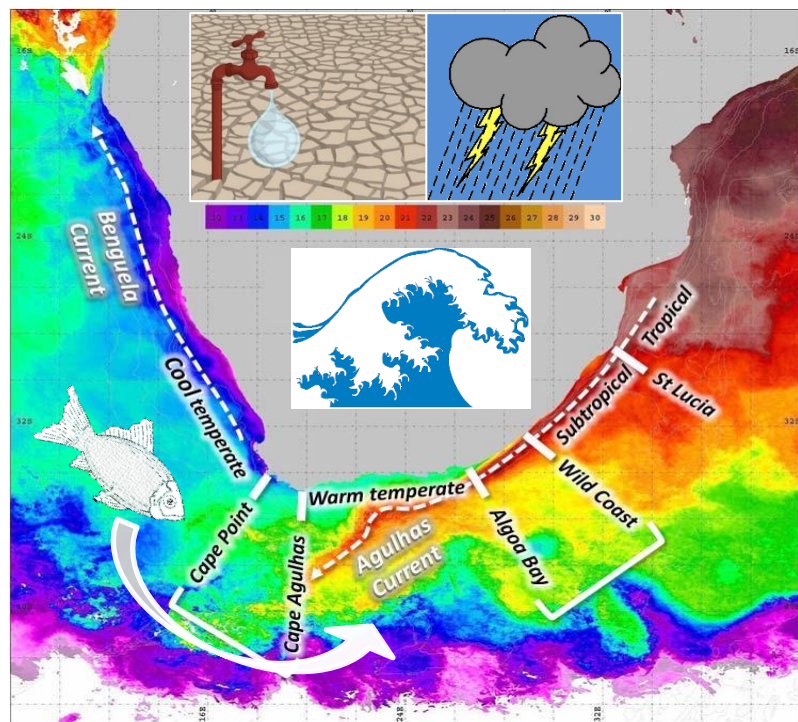


## Ecosystems and Climate Change

The world's climate is always changing, but because of the way that people have been living since about the 1950s the climate is changing faster than it ever has. The burning of fossil fuels (e.g. petrol and diesel) has resulted in carbon, that was once trapped deep underground, being released into the atmosphere as Carbon Dioxide. For the most part, the world is becoming warmer, but it is also becoming more extreme and unpredictable. The change is causing natural ecosystems to be thrown out of balance.

### Some of the changes that are associated with climate change:

- \* More frequent droughts.
- \* More frequent storms.
- \* More frequent floods.
- \* More frequent heat waves.
- \* Change in where certain species are.
- \* More coastal erosion.
- \* New species available.
- \* Changes to river flows and how often the mouth of rivers are open.



**What does this mean for you?**

- Changes in water temperatures?

- Sea level rise?

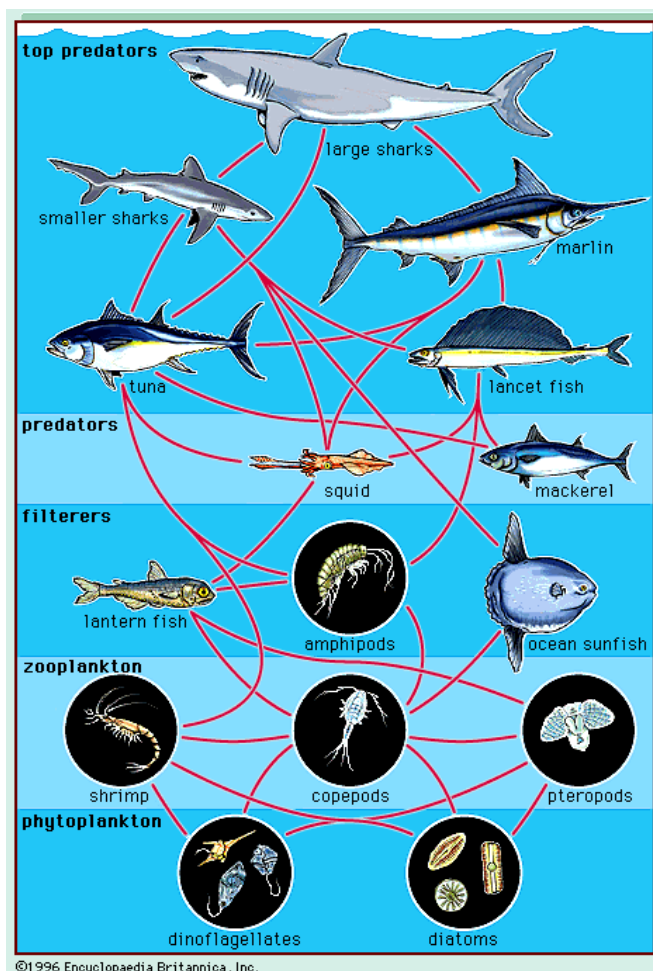
- An increase in unpredictable and extreme weather?

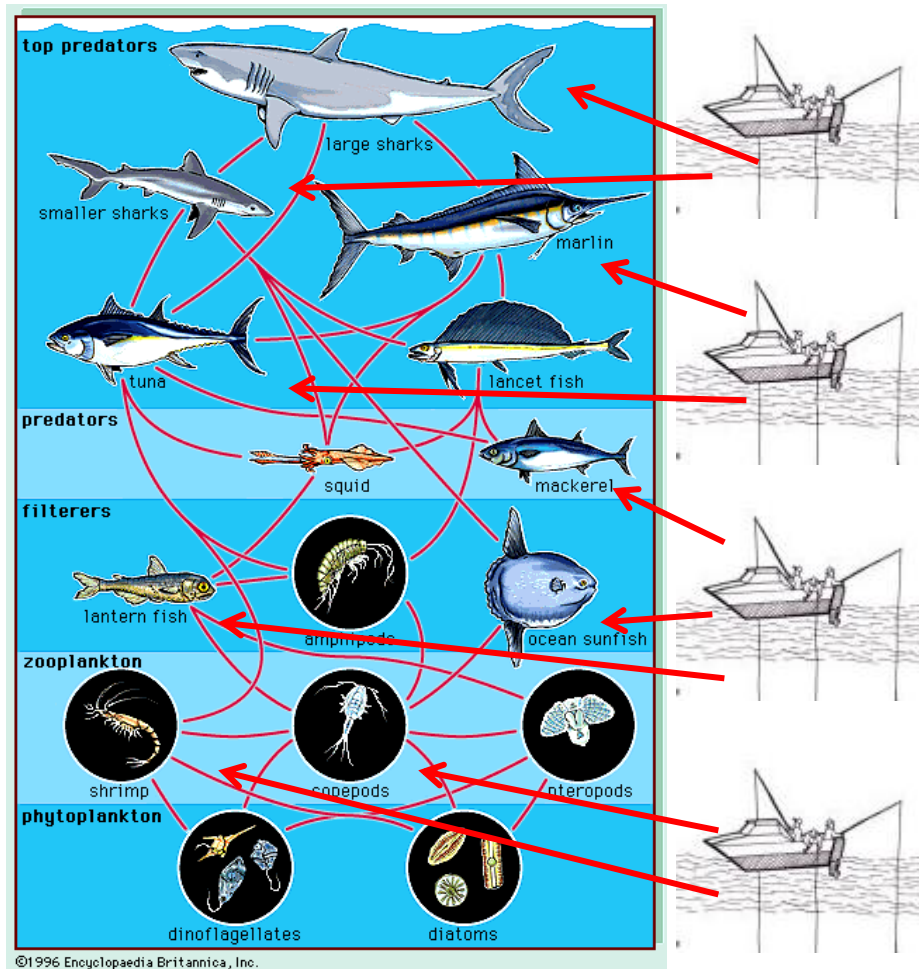
**What can you do?** The good news is, that if the ocean is healthy and the fish in it are healthy, they are better able to adapt to changes in their environment. A diverse and healthy environment and ecosystem will give species opportunities to adapt. Think about how you are much more likely to get sick when you are stressed or under strain, it is the same for animals in the ocean. Things like pollution, over fishing, habitat destruction and the like, make it harder for animals to survive changes in temperature or extreme weather.



## Food webs

A food web shows how living things depend on one another to survive.





## WE FISH FROM THE ENTIRE ECOSYSTEM!!!

This can unbalance the ecosystem, if fishing is not done responsibly. We need to fish using an ecosystems approach to fisheries where we consider how all the links between the different animals and plants impact on each other, and manage our fishing so as to do the least harm and to protect the seas for the future.



## Effects of Fishing

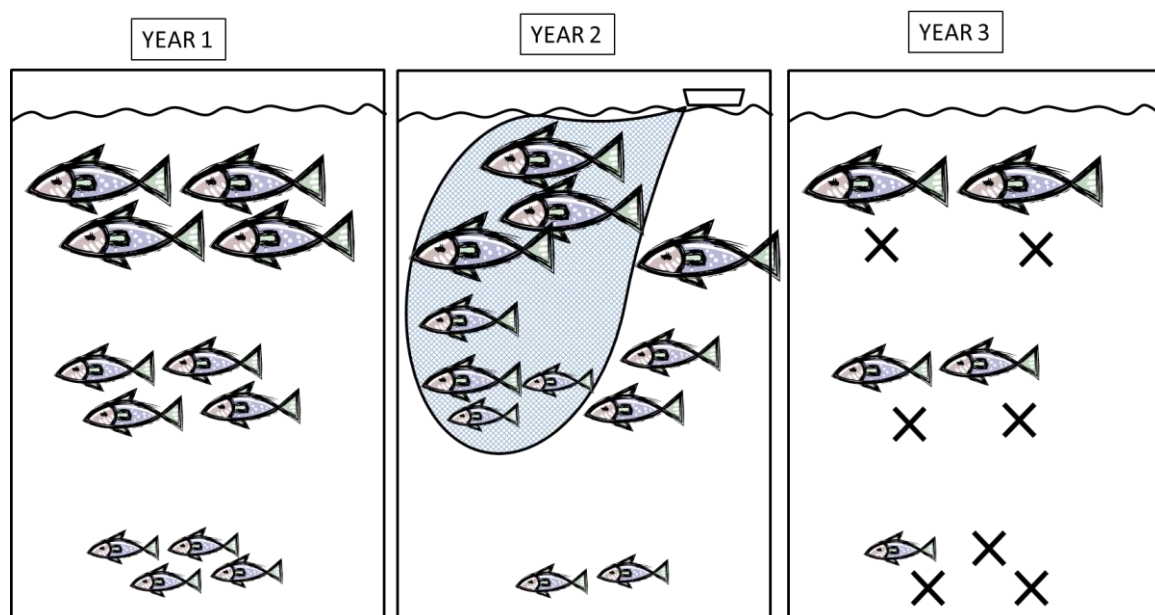
Through fishing we have an effect on the marine environment and the ecosystem.

We can fish too much, this is called overfishing. To make sure we don't overfish we need to fish SUSTAINABLY!

**What is sustainability?** If an activity is sustainable, it can continue forever. Fishing sustainably means that our generation must not use up all the marine resources our planet holds. We must use resources carefully so that the resource is able to survive and reproduce and everyone can benefit now and in the future. Overfishing is NOT SUSTAINABLE.

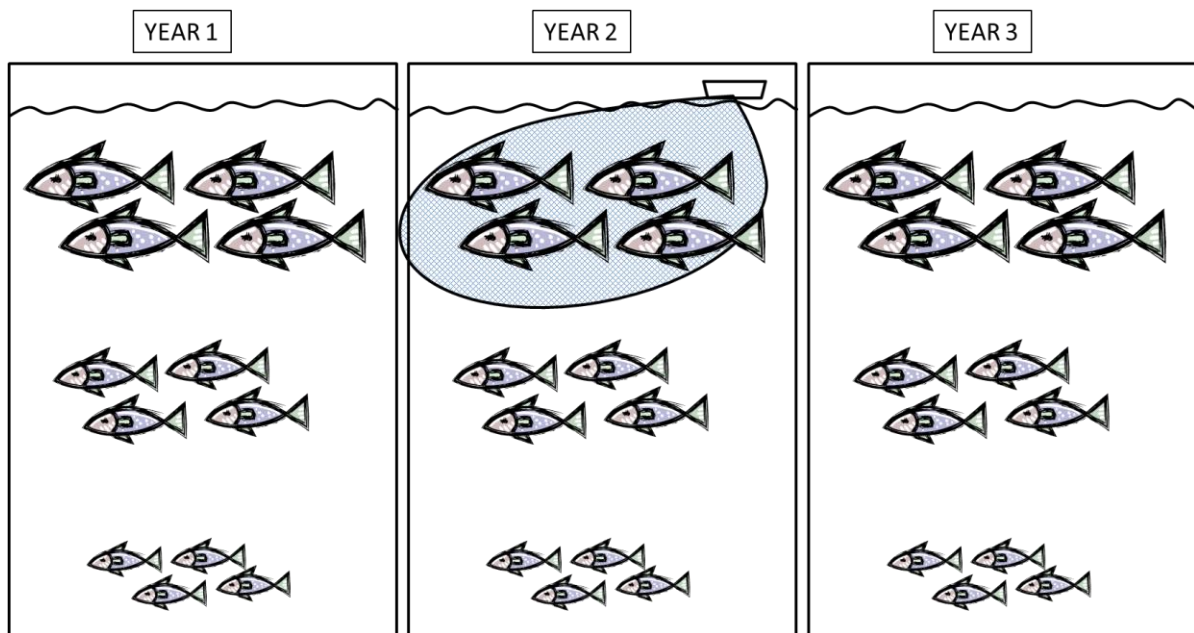
### Fishing Sustainably

Fishing unsustainably: in the picture below you can see that if you take too many fish one year you won't have enough fish left for the next year. There need to be enough fish left to breed to make sure there are more fish for the next season.



Fishing sustainably: when we take fish out of the sea, we need to make sure that we leave enough fish behind in the sea to breed. This will ensure there are fish left for the next season. This is called fishing sustainably.





## Pollution

*What happens to things you throw in to the sea?*



Do you know that there is a raft the size as South Africa, floating in the middle of the ocean which is just made up of plastic! At the annual International Beach Clean-up day, **more than 8 million kilograms of rubbish are picked up around the world in 1 day in 2015!**



### *What do you do with your stompies?*



These fishers in this photograph above are tuna fishermen from Hout Bay. They came on the Responsible Fishing training course and learnt about pollution and how stompies which get thrown overboard add to this pollution. They decided to make a difference and attached coke bottles to their fishing stations and threw their stompies in there instead of into the sea. This is one of the photos they sent us to show how many stompies they bring back to land after a fishing trip.

Pollution comes from the air, activities at sea or from the land. Pollution includes litter and plastic and oil discharged from ships. Pollution can make your fish unsafe to eat or sell.



### *What happens to your fishing gear when it gets lost at sea?*

Fishing nets which get lost at sea won't stop fishing. They carry on fishing forever but no one gets to ever see the catch. The fish just die at the bottom of the ocean which then attracts more fish which can get caught in the net too. The same is true of discarded hooks and fishing line. This not only impacts on the ecosystem but also reduces the number of fish in the sea to catch in the future.

We need to be careful about everything which gets thrown into the marine environment because everything ends up in a marine creature's home. If the homes of animals such as the fish are destroyed, then the fish will have to move elsewhere or they will die out, and be gone forever.



As fishers, we have a responsibility to care for our environment, in order to protect it for future generations. As fishers that spend a lot of time in the marine environment, we have an opportunity to make a difference.

## Bycatch

*When you are fishing do you only catch what you are targeting?  
What do you do with catch which you are not allowed to keep?*



We often catch other species which we are not targeting. For example, in the hake trawl fishery sea birds get caught in the fishing gear.

Another example is in the rock lobster (kreef) fishery - often other fish, like kingklip, swim into the traps or hoop nets.

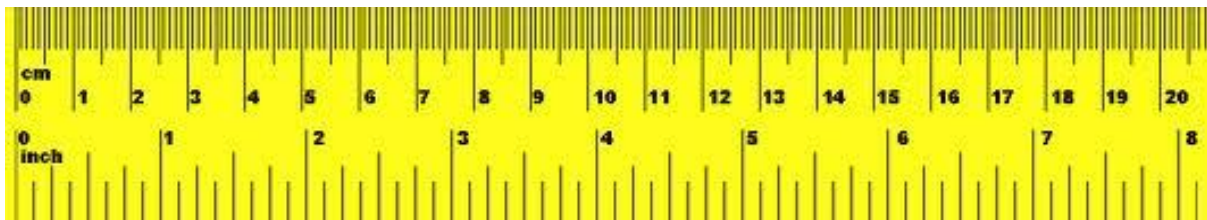
***Has this ever happened to you?***  
***Why is it not good to catch other species?***

When we are fishing we are not always only impacting the fish we are targeting, there could be other species impacted, which will have an effect on the ecosystem.

## **Undersize Catch**

***Why are there size limits on the fish we catch?***

Just like humans, fish can't have babies straight away they need to get to a certain age first. We need to give the fish time to breed before we catch them so that there will be more fish in the sea for us to catch in the future.



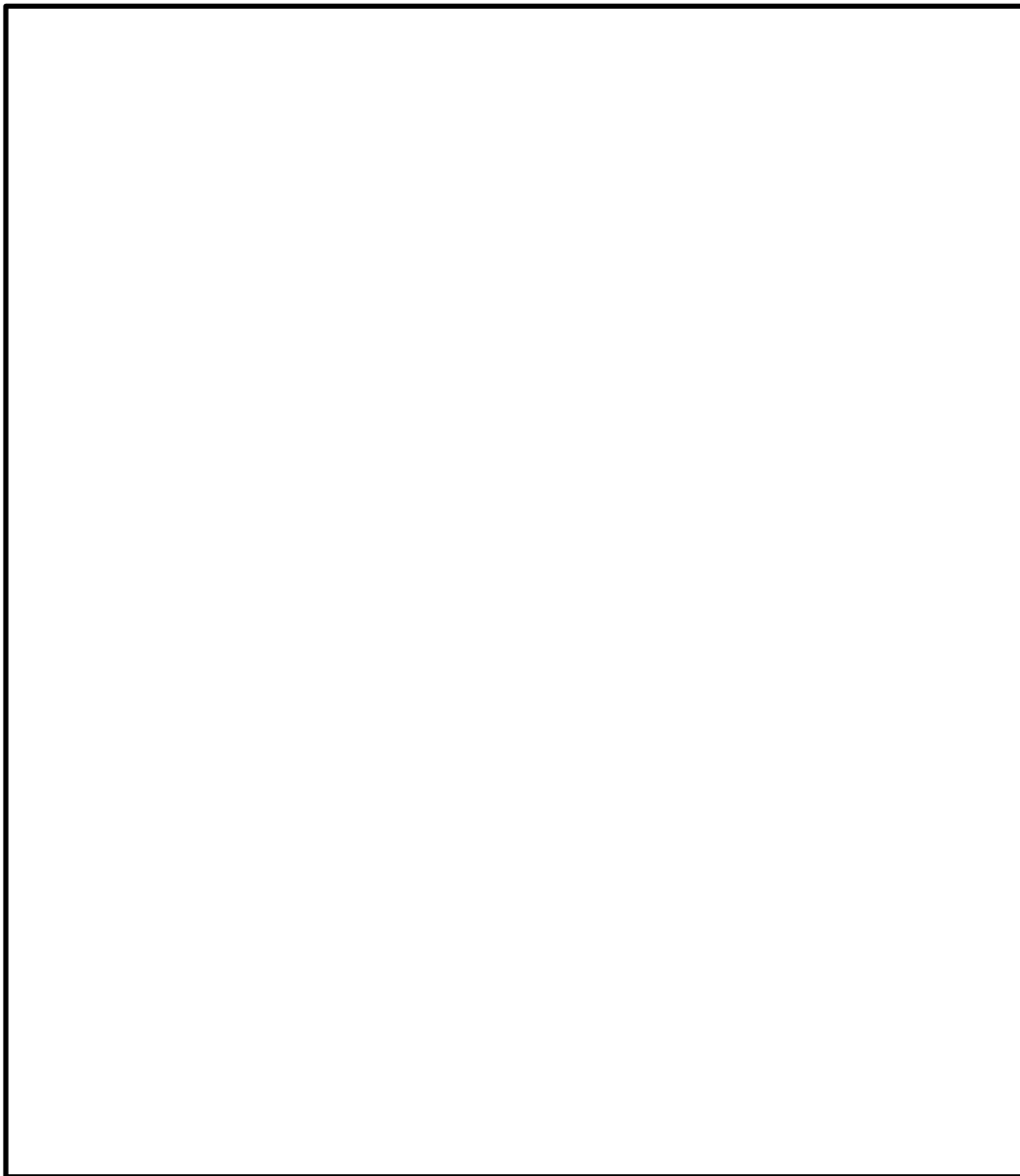
## Why are fish important?

### Exercise:

In groups discuss what the importance of the coast is then come back and discuss this with everyone.

### The Coast:

Draw a picture of the coastline below and then draw everything that happens on the coastline (e.g. fishing, swimming, diving etc.)

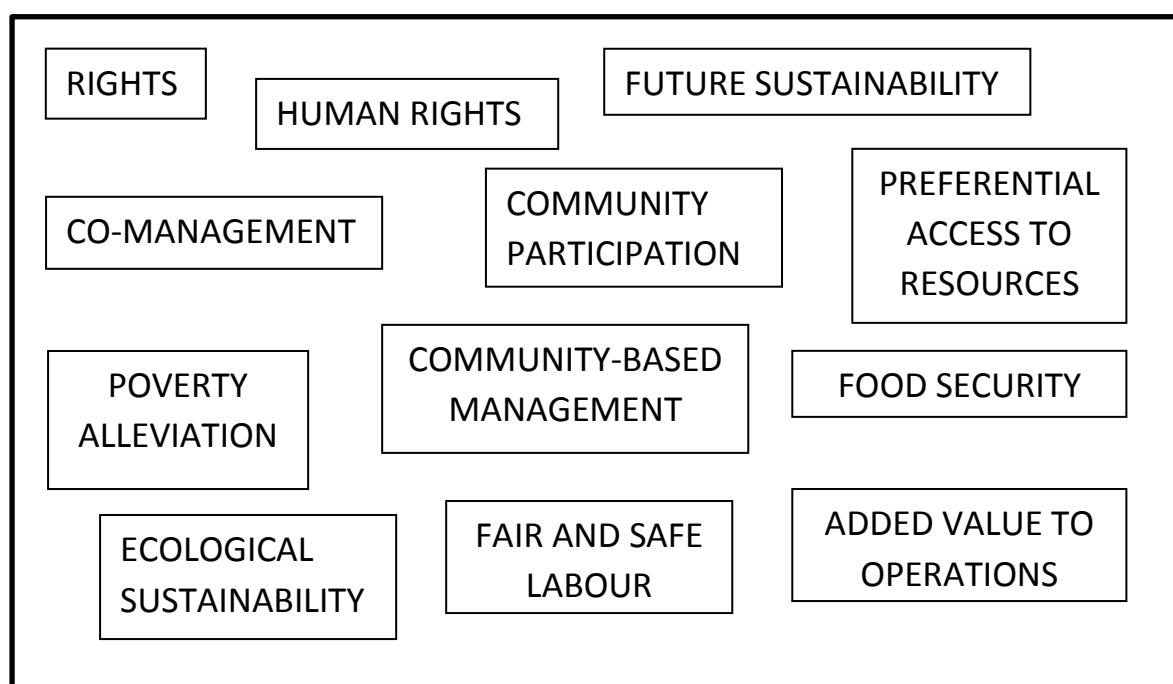


## Chapter 3: Introduction to Management

### Introduction to Management

## WHAT DO YOU WANT THE ECOSYSTEM TO LOOK LIKE IN THE FUTURE? HOW DO WE GET THERE?

*What are the principles of small scale fisheries management?*



### Co-management

*What is co-management?*

It is a **PARTNERSHIP** between government, local communities and resource users, as well as other stakeholders to share the responsibility of managing a resource or an area.



## Principles of co-management:

- \* Being open to benefits and opportunities that come from sharing skills and experience of different stakeholders.
- \* Seeking transparency and fairness in all fisheries management.
- \* Recognising different values, interests and concerns in managing a particular resource.
- \* Learning by experience, and improving management operations.
- \* Non-government role players take on a more important role in the management of a fishery.
- \* Understanding that the long term benefits of a co-management process are more important than any short term gains.

To be an effective player in the fisheries management, it is important to understand how the marine ecosystem works and how government takes management decisions. Open and transparent sharing of information is an important part of co-management.

### **Exercise:**

***What are the benefits and challenges of co-management?***

(See page 32 for some suggestions.)

BENEFITS	CHALLENGES



## An example of successful co-management: Sokhulu mussel project KZN



This community works together with local authorities to ensure that they have mussels to harvest for the future and to combat illegal mussel harvesting. This is a good example of where co-management has worked.

Chair: Sokhulu  
mussel harvester  
Vice Chair:  
Conservation  
authority

JOINT  
COMMITTEE

- Constitution
- Minutes
- Legal right to manage and issue permits

1. Provides a forum for communication between the harvesters and the authority through holding monthly meetings;
2. Decides on the harvesting system, including individual permits, bag limits, tools and seasons;
3. Oversees the implementation of the harvesting system, via community monitors;
4. Obtains information for the harvesters about national issues relevant to subsistence use; and
5. Networks with other subsistence fishing communities.

Monitoring is done by community members who are elected in by the Joint Committee

### ***The Policy for Small-scale Fisheries Sector in South Africa promotes co-management***

The Policy for Small-scale Fisheries (2012) recognises the Ecosystems Approach to Fisheries and promotes the management of small-scale fisheries resources through a community based co-management approach that ensures the sustainable harvesting and utilization of resources.

This means that, ultimately, communities will be responsible for managing their own resources with assistance and consultation with government and other stakeholders.

A co-management committee will be responsible for drawing up fisheries management plans for managing their resources. For each community, the co-management committee should be represented by the:

- \* Community (through the community-based legal entity),
- \* Government (national, provincial, local),
- \* Relevant conservation authority.

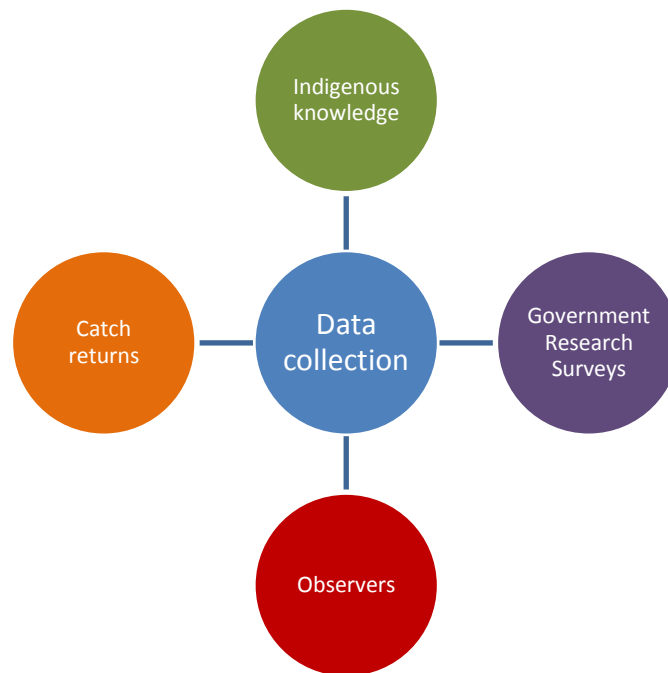
The co-operative structure is promoted as the community-based legal entity responsible for managing resources within a community. Each fisher community will form one co-operative (in which all fishers are members) in order to manage all activities associated with harvest and post-harvest activities.

The co-operatives will function through a primary and secondary co-op.

<b>Primary Co-operative</b>	<b>Secondary Co-operative</b>
<ul style="list-style-type: none"> <li>* Include all people verified as small-scale fishers</li> <li>* Harvest resources for own consumption</li> <li>* Be responsible for applying for rights and permits</li> <li>* Be allocated permits (food security permit and e.g. linefish permit, WCRL permit)</li> <li>* Work in the commercial sector</li> <li>* Be involved in management plans and co-management structures</li> <li>* Provide employment opportunities for community members who are not verified fishers</li> <li>* Be involved with supplementary/alternative livelihoods such as aquaculture, boat building, gear maintenance</li> </ul>	<ul style="list-style-type: none"> <li>* A secondary structure made up of primary co-op members</li> <li>* Be involved in management plans and co-management structures</li> <li>* Involved in marketing processes</li> <li>* Involved with post-harvest value adding opportunities e.g. processing</li> </ul>

## Data collection

*Where do we get information from to manage a fishery?*



**Catch returns:** “blue book”, catch return form, catch return book, catch statistics logbook, log sheets

**Observers:** people who come and see what is being caught for research, they are not law enforcers.

**Government research surveys:** Surveys which are done to assess how large the fish stocks in the sea are.

**Indigenous knowledge:** knowledge gained by the fishers over the years which isn’t recorded by government surveys and observers.

Which methods are being used in your area and how?

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### ***What happens when you don't report your catches truthfully?***

If you say you caught less than you did: Scientists will think there are fewer fish in the sea than there are, so to try give the fish chance to recover, they will decrease the amount of fish that fishers are allowed to catch.

If you say you caught more fish than you did: It will look like there are more fish in the sea, so for the next year you might be allowed to catch more, but because there aren't more fish in the sea, you might cause the population to collapse and the year after that, you won't be able to find any fish to catch at all.

## Management options

Now we have the correct information, what options can we use to effectively manage the fishery?

*How do we fish and make sure we can still carry on fishing forever by keeping a healthy ecosystem?*



#### Limit amount of fish caught

- Bag limits
- Sea day limits
- Limit number of fishers/boats



#### Closed Fishing areas/seasons

- Marine Protected Areas
- Closed seasons/times
- Preferential access
- Habitat protection



#### Other

- Gear restrictions
- Fish size limits
- Precautionary Principle
- Aquaculture development
- Diversification of livelihoods

## ***Marine Protected Areas are one of the ways of managing a sustainable fishery system***

### **What are Marine Protected Areas (MPAs) and why are they important?**

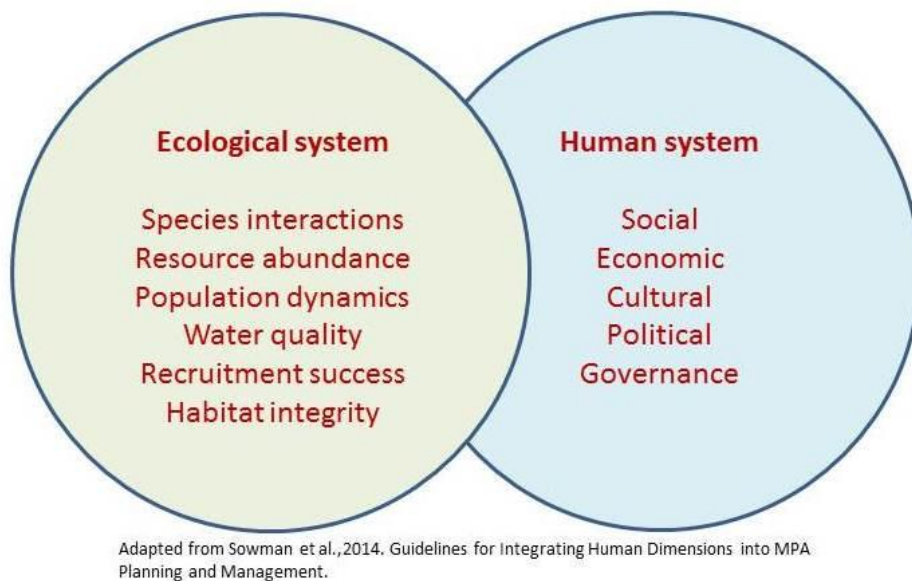
Marine Protected Areas (MPAs) are a means of conserving marine resources and creating a healthy marine ecosystem for current and future generations. They improve the health of our oceans by protecting habitats and species, and rebuilding fish stocks.

MPAs can contribute toward community well-being if the socio-economic and cultural context of the communities is taken into consideration in MPA planning and management.



### **How can marine protected areas be effective?**

MPAs are an important tool for conserving depleting marine resources. To be effective in achieving their goals, MPAs need to adopt a holistic and integrated approach to planning and management that considers human rights and socio-economic needs as well as ecological sustainability. It is important to consider the ***human dimensions***.



**What are some of the ways marine protected areas can achieve their conservation and societal goals?**

Actively engage with stakeholders  
Build trust with stakeholders  
Strengthen fishers participation and consultation in planning and management  
Understand and recognise customary and traditional governance systems that exist  
Recognise and integrate different knowledge systems  
Evaluate the most appropriate management scenarios



### **Exercise:**

Use these options to play a game where you manage a fishery sustainably.

In groups you will get a set of marbles and you will fish for a few “seasons” using different management options to see how best to fish sustainably.

Different options work better for different fisheries.



## **Chapter 4: Enforcement and Compliance**

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Undertaken by government to:

- \* Ensure that regulations are adhered to
- \* Avoid over fishing of resources
- \* Control illegal activities
- \* Gather information on a fishery

Co-management is encouraged.

Communities self-regulate and support.

*Refer back to marble exercise as an example*

### **What would happen without compliance?**

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## What role can/do you play in compliance?

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### More Information

Fisheries in South Africa:

Hake inshore trawl	Bottom trawling for hake near the coast.
Hake offshore trawl	Bottom trawling for hake in the deep water far from the coast.
Hake longline	Using a long line with hooks attached to it to catch hake off the bottom of the ocean.
Hake handline	Catching hake off a hand line.
Small pelagics	Pilchard/Sardine and anchovy caught in a net called a purse seine which is a net which is placed in a circle around the fish to catch them.
South Coast rock lobster/ West Coast rock lobster inshore/ West Coast rock lobster offshore (Kreef)	Rock lobster is caught on the South and West Coasts of South Africa. There are different methods of catching Rock Lobster – hoops and traps and diving.
Squid	The squid fishery catches squid using a method called jigging. They use big lights on the boats to attract the squid. Squid is also called calamari.
Horse mackerel	Horse mackerel are caught in a trawl net called a midwater trawl because it fishes in the middle of the water column between the bottom and the top.

Patagonian toothfish	Patagonian toothfish are caught in the southern ocean with different types of longlines.
Prawn trawl	The South African prawn trawl is very small and it is based in Kwa-Zulu Natal. This fishery catches a lot of bycatch.
Tuna and swordfish longline	The tuna and swordfish longline fishery uses a longline which fishes in the middle of the ocean to catch tuna and swordfish and sometimes shark.
Tuna pole	Tuna pole fishery uses a method called pole and line; they spray water over the ocean surface to attract the fish.
Abalone	Abalone is caught by hand from the shore by divers. There is a lot of illegal fishing for abalone.
Seaweed	Seaweed is hand collected from the shore.
Demersal shark	Shark is caught in the long line fishery, this is not actually a fishery anymore it is now part of the tuna and swordfish fishery but there are a few boats which still target shark.
Traditional linefish	This fishery uses small boats to go out and catch fish which are found near to the coast of South Africa. They catch a range of different species.
White mussel	White mussel is hand collected on the beach. White mussel grows in the sand and is easily accessible at low tide.
Gillnet and trek net fishery	The trek net fishery is where a net is taken out to sea from the shore and brought back and then pulled onto the shore with its catch. You often see fishers on the beach bringing in a catch.

Examples of benefits and challenges to co-management:

BENEFITS	CHALLENGES
Access to resource To be informed about policies and legislation Sustainable resource Reduced poaching Cooperation with law enforcement Sense of ownership of a resource More equitable, appropriate and efficient management of resources Integration of different knowledge systems Development of skills Development of alternative livelihoods Community monitoring, data gathering and research Ongoing evaluation of management practices Enhancing the role of communities in decision making Sharing responsibilities Resilience Community cohesion Addressing long term challenges	Resolving conflict Skills Language Funding Different interests Mistrust Management of complex systems Capacity building for increased responsibility Context specific Prevailing top-down approaches Weak organisational capacity Weak co-ordination amongst government departments Poor awareness

### *What are the principles of small scale fisheries management?*

1. To legally and formally protect Small Scale fishers by giving them fishing rights, and seek to prioritise the small scale fishing sector within fisheries as whole.
2. To make sure that everyone has access to and benefits from our marine coastal resources, taking into account historical disadvantages because of race, gender or disability.
3. To improve access to marine living resources by giving small scale fishers preferential access, including access to coastal strips of land where appropriate.
4. To work together to set up appropriate co-management institutions, to manage the small scale fisheries sector in a way that recognises national management rules and also takes local issues into account that promotes a community-based approach.
5. To ensure that management and use of marine living resources on the coast is sustainable for the future.
6. To manage small scale fisheries so as to make sure that small scale fishing communities gain the most benefits, and to invest in processing and marketing activities/facilities to and to build the capacity of local fishing communities to add value to their fishing operations.

7. To facilitate co-operation amongst relevant Government departments to promote poverty alleviation, food security, sustainable livelihoods, fair and safe labour practices, and local economic development.
8. To promote the participation of affected Small Scale fishing communities in matters that affect them; the planning and implementation of marine protected areas, the amendment of any laws, harbours, defence or other strategic facilities.

## Definitions

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- Ecosystem: A complex set of relationships among the living resources, habitats, and residents of an area. It includes plants, animals, fish, birds, water, soil, and people.
- Ecosystem Approach to Fisheries: Ecosystem Approach to Fisheries is a management approach which seeks to protect and enhance the marine ecosystem health as a whole, on which life and human benefits depend.
- Food web: The linked paths that energy takes as it passes from the sun to producers to consumers (i.e. from plants (grass) to herbivores (cow) to carnivores (lion) to decomposers (maggots))
- Habitat: The place where a creature normally lives, sleeps, eats and takes shelter
- Precautionary Principle:
- Predator/Carnivore: An animal that hunts and kills other animals for food. For example, a shark (predator) that eats a fish (prey)
- Species: A specific type of animal
- Sustainability: A process or state that can be maintained at a certain level forever

## Important Contacts

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- If you find a stranded dolphin or whale: 021 402 3911
- If you observe a RED TIDE: 021 819 2450 or 021 819 2457
- If you want to report someone that is fishing illegally: 028 313 2703
- If you want to contact DAFF:
  - **Postal Address:** Branch: Fisheries; Private Bag X2; Rogge Bay; 8012
  - **Telephone Number:** 021 402 3911 or 0860 000 3474
  - **Website:** [www.daff.gov.za](http://www.daff.gov.za)