Marine Protected Areas (MPAs) - Information Guide

General notes for delivery of educational content:

A. Opening - defining of the subject
B. Presenting the problem (through discussion or advocacy) + human activity
C. How it affects us and the environment (over the short and long term)
D. Existing solutions + suggestions for solutions on a personal level

Duration: about 10 minutes

Duration (min)	Topic	Content
1	**What are MPAs?**	A Marine Protected Area is a specific type of nature reserve. Nature reserves are areas that are set aside to be conserved and protected. Human activities (e.g. hunting, industry, and even recreational use) are restricted in order to protect landscapes and biodiversity. Nature reserves often have rare and unique flora, fauna, and landscape features. MPAs are nature reserves located in or along the seas and oceans. In our modern world, the activities of people are dramatically impacting nature, directly and indirectly. If we want to conserve and protect natural areas for future generations, we must respect the rules enacted to protect them, such as the declaration of nature reserves and MPAs.
1	**Human-nature conflict in marine areas (the problem)**	*Guidance notes: use discussion while presenting the utilization* Maritime areas are being severely exploited by humans. Recently, following the discovery of natural gas reserves in the Mediterranean Sea, pressure on our marine areas has increased. People use the oceans and seas for travel, transportation of products, fishing, communication technologies, desalinization of water, and extraction of energy resources. Infrastructure and development on the shore, such as ports, marinas, and turbines,take up valuable space and place additional pressure on the marine environment. Animals and plants must try to survive amidst all this human activity and development.

Duration (min)	Topic	Content
2	**The political solution**	In order to guarantee the persistence of marine life, there is a need for regulations, legislation, and declaration of protected areas. In MPAs, most human activity, excluding some marine tourism (e.g. diving and swimming), is restricted or prohibited. That means no infrastructure, seacraft (excluding that of INPA rangers), or recreational and commercial fishing. One example of legislation protecting the marine environment is The Prevention of Sea Pollution from Land-Based Sources Law, 1988, which prohibits the discharge of waste and wastewater into the sea whenever there are practical, economically-feasible, and environmentally-preferable alternatives for treatment or reuse on land. However, legislation alone is not enough. MPAs are also needed. A 2006 UN declaration, which the State of Israel signed, set a goal that by 2020, 10% of Israel's territorial waters should be declared as protected areas. It has been suggested that 20% of the total area should be protected. In reality there are only 7 declared MPAs along the shore of the Mediterranean Sea, representing only 3% of Israel's territorial waters (3.2% including the Red Sea). That means we are close to the deadline, but far from our goal. This is an international goal, because protecting nature has no borders. Governmental declaration of nature reserves (and MPAs) is a top-down approach; an order from the government to the public.
1	**How to do it right? How to characterize nature reserve location and size?**	To guarantee nature reserve efficiency there is a set of thumb rules to consider: size, landscape diversity, biodiversity (including landscape diversity), number and distribution of nature reserves, and their connectivity, and animals' movement ability between them (as we know animals don't have borders, and they move as they will). The shape of nature reserve is also important - the more complex the perimeter (e.g. odd shape or linear contrast to round or square), the bigger the contact with disturbance from the outside. Consider, fishermen standing on the MPA perimeter; the larger the perimeter, the larger the pressure on fish.

Duration (min)	Topic	Content
3	**Nature reserve advantages:**	Nature reserves provide a safe space, in which an animal's entire life history traits can be accomplished, through days, seasons and years. Such traits include food foraging, reproduction, migration, etc., and may differ throughout the animal life cycle, even prior to hatching. When an individual can realize all of its life history traits, the population can safely reproduce, and maintain a sustainable size, which is supported by and supports the ecological ecosystem. Sine organisms have no borders, they may disperse from nature reserves outwards. In MPAs for example, when fish population is stable, there are more fish for fishing outside the MPA Lack of fishing supervision can danger the fish population size. In order to maintain it, the fish reproduce at an early stage in life, which trade with adults' smaller body size. That means their reproductive success is lower, resulting in less young fish, and the slow degradation of the fish population. Animals learn to detect safe places in the sea. They react to human presence, activity and the disturbances they create. MPAs allow animals to achieve bigger size and delay reproduction age - two traits that increase their reproduction success. Thus, on the one hand, there are more young fish that will provide the next generation, and on the other, fishermen achieve a larger catch (the same net mass, but fewer fish getting caught). In addition, nature reserves sustain more biodiversity, which has major importance for ecosystem stability, and even for mitigating? catastrophes. We may not always be aware of each and every organism role in the ecological ecosystem, but that does not mean their role is not important. Ecological systems are complex, and the purpose of some nature reserves is to protect the ecosystem in general and the organism within it in particular, especially endangered and endemic species.

Duration (min)	Topic	Content
2	**Closing notes and the size of the "little" man affect:**	*Guidance notes: use discussion on the activities an individual can apply. Show them that these are simple acts that support the objective.* Although one activity may be limited, it is not completely prohibited. People can still enjoy and spend time at a nature reserve, on land and in sea, when hiking, swimming and diving. We can and should enjoy all nature treasures that we act to protect. In order to protect nature, as a society we can act and demand that the government take actions to protect larger areas and more species. This approach is a bottom-up approach, and it works. What can be done? Demand for the declaration and the expansion of more nature reserves. This approach also works, you just need to do it right, and along the process recruit stakeholders, such as fishermen and entrepreneurs to make them realize that MPAs will not harm their livelihoods, on the contrary, they will benefit. And along the way, prevent littering and pollution from getting into the MPAs, which usually, due to their distance are more likely to be neglected and forgotten by the public. In the end we would all love to encounter with a dolphin or a sea-turtle in their natural environment.

Guide help page

- Nature reserve definition: a specified area, in which its flora, landscape and animals, which are usually (but not necessarily) rare and unique, conserved and protected from human activities (e.g. hunting, entrepreneurs, and even hikers).
- Human activity is restricted in the area defined as a nature reserve, the nature of the restriction can vary between the reserves, and in different countries different policy approaches are taken, usually suited to the local public culture and way of life.
- Marine Protected Areas (MPAs) are equivalent to a land nature reserve, only in the sea or oceans.
- A 2006 UN declaration endorsed a 10% of protected areas goal for each of the world's ecological regions by 2010.
- Only about 5.3% of the seas and oceans are declared as protected areas.
- About 3% of the maritime space of the State of Israel in the Mediterranean Sea is protected as a declared MPA (3.2% including Red Sea MPAs).
- From the mid-1960s until the early 2000s, six small MPAs were declared in Israel, covering a total area of 10.4 km^2 - about 0.25% of Israeli Mediterranean territorial waters, and usually extending several hundred meters west from the coastline into the sea.
- The total area size for suggested MPAs is 20% of Israeli Mediterranean territorial waters.
- Most of the maritime space is not governed by any state, thus exposed to exploitation by non-ecological and non-sustainable activities.
- Nature reserves and restrictive legislation are important for the ecological requirements of every organism through all the stages of its life.

- Different animals spend time in different habitats at different stages of their lives, or corresponding to different activities such as reproduction, foraging, sleeping sites and so on.
- When a state declares a protected area, for the conservation of any animal, it must ensure that it provides a protected space and a protected passage between the areas, depending on the animal's different activities, and the area in which they occur.
- A stable and functional nature reserve allows different species to recruit young individuals to the population.
- "Recruitment" refers to the addition of new individuals to an existing population of a specific species. Such recruitment may be the result of the breeding season or migration of individuals between populations (usually young individuals).
- Nature reserves allow different species to reach a larger adult body size.
- Since all living creatures are not exclusive to nature reserve protected areas, they spread out of it, contributing to biodiversity maintain even outside the protected area.
- For mankind such

- For humans, such "conduct" allows the ecological environment to continue to provide functional system services (e.g. fishery biomass).
- The global economic value of marine ecosystem services is estimated at $49.7 trillion per year. By comparison, the total gross domestic product (GDP) of the European Union is estimated at about $16.3 trillion.
- The declaration of a nature reserve is at a national level (i.e. a top-down approach), but initiation and advancement of the process can be done by the public (i.e. a bottom-up approach).
- The Representativeness Principle - Nature reserves as a whole represent all the bio-geographical and regional habitats enshrined in the "Convention on Biological Diversity" (CBD) - Cartagena Protocol 2000.
- The Replication Principle - Each habitat will be present at a number of separate sites.

Appendix

The Mediterranean Sea

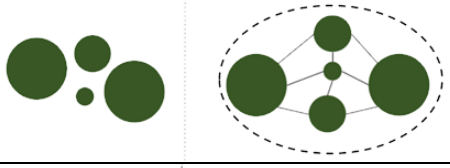
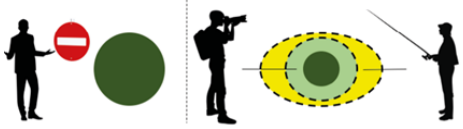
Declared Marine Protected Areas (MPAs)

Rosh Hanikra Marine Reserve - Achziv
Shikmona Marine Reserve
Dor Habonim Marine Reserve
Dor islands and Ma'agan Michael Reserve
Gedor Marine Reserve
Nitzanim Sands and Marine Reserve – Avtach
Shikma Marine Reserve

Sugested Marine Protected Areas (MPAs)

Shavei Zion (Bustan Ha-Galil)
Rosh Carmel Marine Reserve
Carmel (Neve Yam) Marine Reserve
Ma'agan Michael Beach and Marine Reserve
Poleg Marine Reserve
Jaffa - Givat Aliya Marine Reserve (Approved)
Avtach (Expansion)

Conservation strategies/principles of reserve design

	Worse		Better
1. **The overall zone**	**Partially**-protected ecosystem		**Fully**-protected ecosystem
2. **Habitats diversity**	**Uniform** ecosystem		**diverse** ecosystem
3. **Area shape**	"**Thin**" reserve (>edge effects)		"**Round**" reserve (<edge effects)
4. **Area size**	**Small** reserve		**Large** reserve
5. **Fragmented vs. Intact**	**Fragmented** reserve		**Intact** reserve
6. **Quantity**	**Single** reserve		**Several** reserves
7. **Sizes diversity**	Reserves with **uniform** size		Reserves with **diverse** sizes
8. **Connectivity**	**Isolated** reserve		**Connected** reserve (wildlife **linkages**)
9. **Connectivity**	**Isolated** reserve		**"stepping stones"** facilitate movement
10. **management**	Reserve managed **individually**		**Coordinated** management
11. **Human presence**	Human **excluded**		People **integration** (buffer zone)