

How the **ECONET** devices work?

The **ECONET** project managed to create:

- ✓ Cheap,
- ✓ Simple in construction and
- ✓ Easy in installation devices,

they can offer the same or better results with conventional applications in restoration of fish stocks (artificial reefs). Instead of concrete, metal, wood or other material, **ECONET** devices are using nets.

Rectangular nets enable to build **three-dimensional structures that can provide shelter and food to many species of fish in the juvenile phase of their lives**. When a net or any other object is placed in the sea, marine life development process on its surface starts immediately re-habitalisation. Gradually, a naked construction is colonized and a new habitat is created that can provide shelter and a new food web. These are the factors that attract fish.

If we can modify the characteristics of this habitat in order to be able to provide protection for juvenile fish, using the **ECONET** devices, then we create a habitat that will support fish and shellfish between the pelagic phase of these species and their final installation.

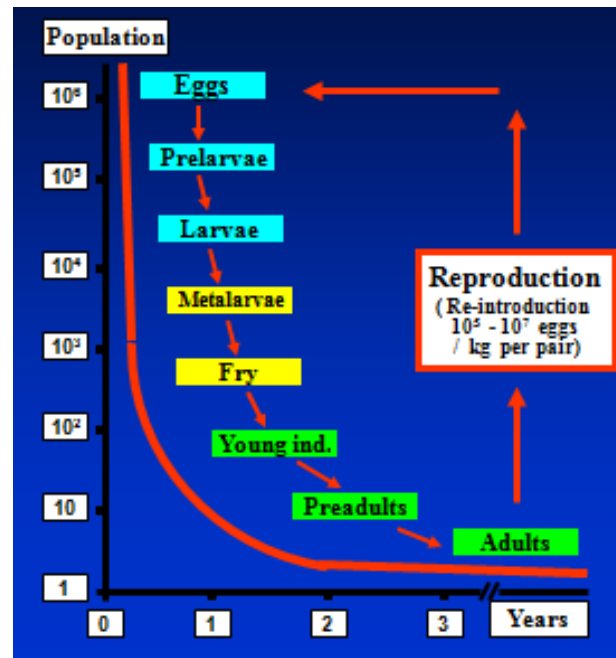
The species that are expected to use such habitats are the non migratory benthic species. If a series of **ECONET devices will be installed in sandy or muddy bottoms, then we help substantially the revitalization of these areas.**

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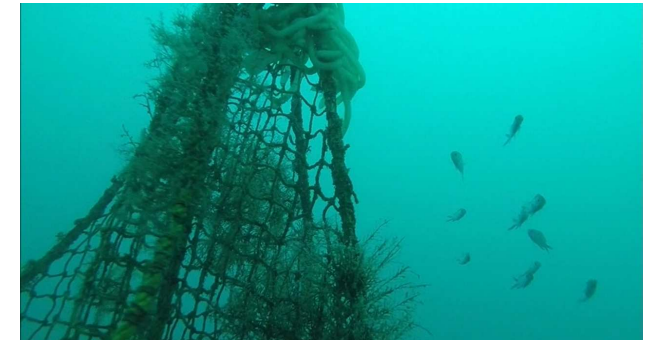
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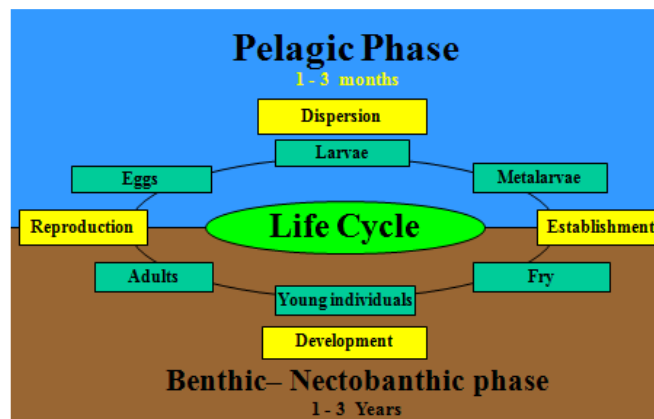
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The continuing global decline of fish stocks due to increased fishing pressure the implementation of a series of immediate measures to rebuild stocks a real necessity. Next to the management measures implemented so far, presented constantly new ideas aimed at helping the main policy for sustainable fisheries management. The use of **artificial reefs** and the establishment of fishing exclusion zones are the most popular.

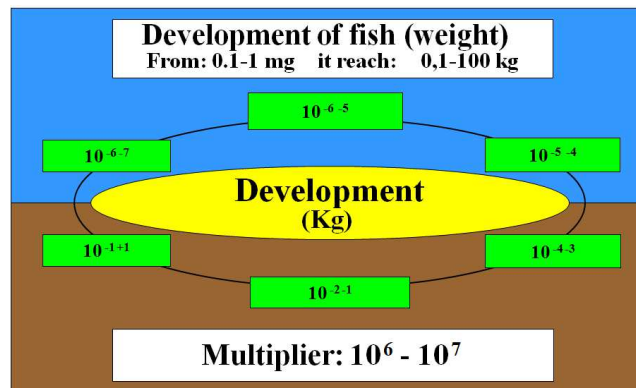
Such proposals have been implemented around the world and provided promising results. The contribution of these methodologies is to **increase** the fish population by **reducing natural mortality**, the effectiveness of feeding young fish and the **facilitation** of installation. The problem of these interventions is the **high cost** of establishing the facilities or the protection zones and the high cost of monitoring, surveillance and management.



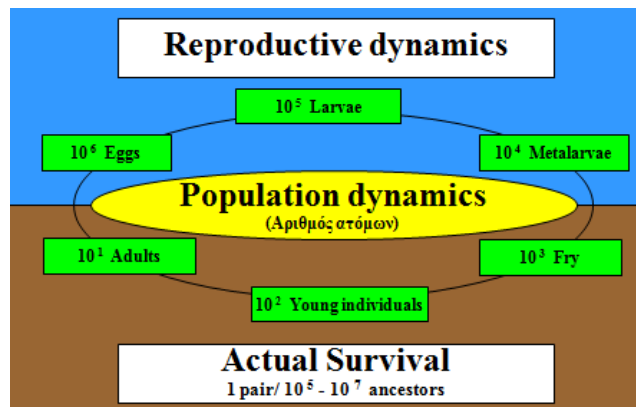
The **ECONET** project designed and developed **fish fry protection devices** with low cost and flexible enough to serve as a tool of attraction and protection of fish but with a lot less construction and immersion costs compared to conventional artificial reefs. Also, these devices are designed and constructed with suitable diameter nets to ensure the protection of young fish from predators. The intervention period of **ECONET** devices focuses on the phase of the fish between metalarvae and fry.



Fish life cycle and planned intervention period with fish protection devices between the stages of metalarvae and fry.

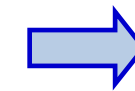


Numeric balance and growth in weight in the life cycle of fish.



Each gram of biomass of juvenile fish protected by the ECONET devices between metalarvae and juveniles, can produced 1 to 10 kg adult fish.

The emerging idea to increase marine population by reducing natural mortality is the **ecological restoration through bio-manipulation** and seems to promise a better result. The idea is based on the extremely high reproductive capacity of fish. In the period between spawning and settlement, fish behave like plankton, forming a passive driven prey exposed to a variety of predators. After that period the fish is continuously migrating in search of suitable feeding grounds. When maturity is reached, the fish migrates again in search of suitable spawning grounds. Fish populations are continuously reduced during this migration either from natural mortality (predation pressure) or anthropogenic mortality (fishing pressure). **If we manage to reduce the natural mortality, the effects on fish populations and fisheries would be catalytic.**



Every gram of biomass that has been saved in juvenile fish may provide one to ten kilograms of adult fish.

The aim of **ECONET** is to meet the requirements in the most lucrative Mediterranean fishing section, the demersal fishery by providing to the fishing industry simple and inexpensive means in order to establish large scale protection programs. The innovative final products that developed will be easy to deploy devices constructed from nets and other inexpensive materials. For experimental research purposes, several types of trapping devices have been constructed. These devices could also form potential products as selective passive gears for the small scale fishery.