PISCO Standard Monitoring Unit for the Recruitment of Fishes (SMURF) monitoring

UC SANTA CRUZ

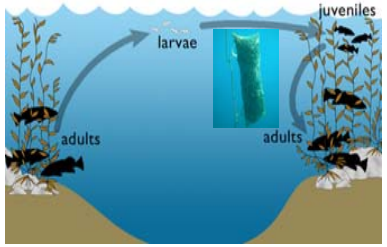
Partnership for the Interdisciplinary Studies of Coastal Oceans (PISCO)

***For more information about SMURFing and PISCO visit* http://www.piscoweb.org**

SMURFing

Recruitment monitoring measures patterns, in the larval transport coming into the near-shore coastal environment.

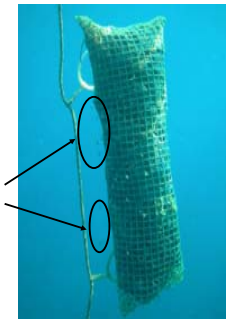
A SMURF is a tool to measure these recruitment patterns in a repeatable way.



How does it work?

Larval fish drifting in the ocean are an easy meal for any passing predator. To survive they shelter under floating debris such as, drifting kelp, wood or even trash.

As they recruit to a new area SMURFs can provide shelter.



Q. How many baby fish can you spot on this SMURF?

A. 16

What is PISCO?

PISCO is a consortium of scientists from:

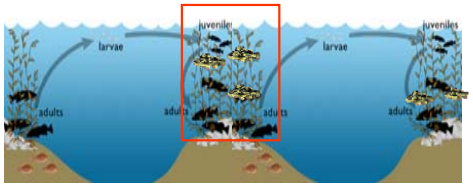
- UC Santa Cruz (at Long Marine Lab)
- Stanford University (Hopkins Marine Station)
- UC Santa Barbara
- Oregon State University

PISCO's monitoring program aims to understand large-scale ocean processes and apply this knowledge to better protect the oceans.

Why SMURF?

PISCO recruitment studies help scientists determine larval sources and sinks. These areas are critical for protection as they can help regenerate connected marine systems after disruptive events such as storms.

MPA



Data Collection

Baby fish are captured by a diver enclosing the SMURF in a BINCKE net. Once captured fish are counted, identified and preserved for further study.

PISCO researcher captures juvenile rockfish that have recruited to a SMURF

Collected juvenile rockfish

Recruitment:

" the process of adding new individuals to a population or subpopulation by growth, reproduction and immigration"

In the ocean, habitats are connected through movement of animals and plants. Most marine fishes and invertebrates have a multi-stage lifecycle and use more than one habitat during their lives.

Although adult animals are fairly stationary on a rocky reef or intertidal area.

Their early life stages (larvae or spores) are planktonic and travel through the ocean currents for weeks to months before recruiting and settling to the juvenile or adult habitat.

A bocaccio uses many habitats throughout its life. Open water, drifting kelp mats, sandy areas, eelgrass beds, boulder fields, and deep-water caves are important for growth and survival during different life stages of this fish. *Art by Ryan Kleiner*

The bocaccio , a rockfish along the U.S. west coast, provides an example of how a species uses more than one habitat (see figure above).

*When fish like the **bocaccio** settle on a new home at each stage of their life cycle they are **recruiting** to a new habitat.*