A juvenile long-spined sea urchin on a Florida Keys reef.

Long-spined sea urchins on a coral reef

Enhancing herbivory to restore the health and resiliency of Florida's coral reef ecosystem

Introduction:

Florida's coral reefs have become progressively degraded in recent decades because, in part, of the mass mortality of the long-spined sea urchin *(Diadema antillarum),* a key reef herbivore. This urchin has not recovered to pre-mass mortality levels in the Florida Keys, but its return is considered critical to the recovery of these reefs. Recent advances in the culture of this species have given rise to the concept that hatchery-raised individuals can be used to reestablish a healthy population of this urchin. However, observations of hatchery-raised urchins revealed they might not behave as their wild counterparts and could therefore be subject to predation rates sufficient to undermine the effectiveness of such an effort. Therefore, research was initiated to identify behavioral deficiencies that may exist in hatchery-reared long-spined urchins that would compromise their survival in the wild and to develop techniques that would overcome these deficiencies.

Objectives:

Ensure that the survival rate of hatchery-raised individuals in the wild is similar to that of wild individuals.

Approach:

Compare the behavior of hatchery-reared and wild juvenile urchins and, if necessary, determine if hatchery-reared individuals can be conditioned to exhibit behaviors similar to their wild counterparts. Seasonal, site, and size-specific mortality rates of wild and hatchery-reared urchins will be compared.

Benefits:

The project will yield the information necessary to develop procedures to assure that hatchery-spawned long-spined urchins can survive on Florida's coral reef ecosystem in numbers sufficient to establish a self-sustaining population of these important herbivores.

Collecting long-spined sea urchins for behavioral experiments

Location:

Florida Keys

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Divers collect juvenile long-spined sea urchins for experimentation

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