Why an Integrated Ecosystem Assessment Program (IEA)?

The purpose of an Integrated Ecosystem Assessment (IEA) is to perform a formal synthesis and quantitative analysis of information on relevant natural and socioeconomic factors in relation to specified ecosystem management goals. The IEA process helps enable an Ecosystem Approach to Management (EAM) and aims to involve citizens, scientists, resource managers, and policy makers.

The Kona coast of Hawaii: A diverse and dynamic ecosystem

Home to a diverse group of species including ornamental fish, lush coral reefs, sea turtles, cetaceans and manta rays, the Kona coast of Hawaii is also home to eco-tourism, aquaculture industry, and recreational and aquarium fisheries. The balance of these human activities with the natural processes along the Kona coast is important to sustain ecosystem health in this important region.

This is a major goal of the NOAA Integrated Ecosystem Assessment (IEA) pilot project for the Kona coast. A complete understanding of the Kona ecosystem, from the land to the ocean, is essential to provide scientific advice used in making informed decisions in the Kona area. To this end, the PIFSC IEA program is working closely with federal, state, and academic partners to identify information and projects which are important issues on the western coast of Hawaii.

NOAA Fisheries Service
Pacific Islands Region
Pacific Islands Fisheries Science Center
http://www.pifsc.noaa.gov/kona_iea

NOAA FISHERIES SERVICE

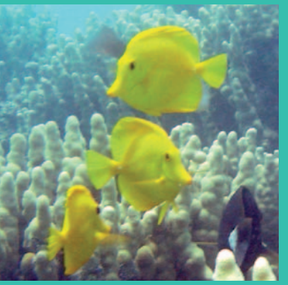
Pacific Islands Fisheries Science Center

Science, Service, Stewardship

Integrated Ecosystem Assessment Program (IEA) Kona region of Hawaii

Management questions of interest in the Kona region

Larval retention - What role does the oceanography near Kona play in the larval fish stage?
Aquaculture - What is the effect of nutrient inputs from these sources to the ecosystem?
Fisheries - What is the effect of extractions from the ecosystem?
Human Dimensions - Can we understand and monitor a healthy Kona from the human perspective to help benefit society?
Groundwater - How does groundwater discharge in the ocean affect the Kona ecosystem?
Climate - What are the potential impacts of climate changes on the Kona ecosystem?
Charismatic megafauna - How can we better understand critical habitat of key species such as spinner dolphins, manta rays, humpback whales, and green sea turtles?



Competing interests? Common uses of natural resources along the Kona coast

One of the major issues in Kona today is the shared use of natural resources such as ornamental fish. These unique and charismatic species are highly sought after in recreational diving and eco-tourism, yet the impacts of these activities on these species is not well defined. In addition, an economically large aquarium fishery extracts numerous ornamental fish species such as the Yellow Tang (pictured left). Understanding how these very different uses of the ocean affect the ecosystem is important to managers, especially when dealing with issues such as marine protected areas and marine spatial planning.

Societal benefits

The IEA process looks at a range of ecological, environmental, and human factors bearing on diverse societal objectives regarding resource use, protection, capacity building, and sustainability.

Partners

A major idea of the IEA process is to use existing information during the process, while identifying gaps and pressure points that drive future ecosystem monitoring requirements. Working with other federal, state, academic, and local partners facilitates the process and allows for shared resources to be used towards a common goal of a healthy Kona ecosystem.

To date, the PIFSC has begun to work with partners including NOS/PSC, PIRO, WPRFMC, USGS, NWS, National Park Service, The Kohala Center, Hawaii Division of Aquatic Resources, UH Manoa (PacIOOS/HiOOS), Hawaii Institute of Marine Biology, UH Hilo, Oregon State University, The International Pacific Research Center, and the University of British Columbia Fisheries Center. The PIFSC will continue to expand their partnerships with other entities that have ties with the Kona region including industry (e.g. Kona Blue, NEHLA), local organizations (Hawaiian International Billfish tournament, West Hawaii Fisheries Council) and more.

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Current projects FY10/11

The PIFSC has initiated several projects in this first year to attempt to answer common management questions identified during the internal and external scoping process of the IEA. These include (with partners):

1) Creating an web-based information portal linked with partner web sites (TKC, HiOOS, UHM, USGS)
2) Constructing ecosystem models for the reef and coastal components to understand energy flows and interactions along the Kona coastline (UBC, NPS, HDAR, HIBT, NWS).
3) Using ocean circulation models for the Main Hawaiian Islands to understand the effects of currents and other features (e.g. ocean eddies) on the retention of larval fish species such as yellow tang along the Kona coast (IPRC, HIMB, OSU, UH Hilo, HDAR, WPRFMC, NWS).
4) Creating socioeconomic indicators to measure human dimensions of ecosystem conditions in the Kona region (NOS/PSC, PIRO, HDAR).
5) Creating a formal agreement with NOS Sanctuaries to assist in their current humpback whale sanctuary management plan review (NOS, HDAR, TKC).

FY11 and beyond

The above projects will partially continue through the 2011 fiscal year, yet these projects only begin the IEA process. The preliminary ecosystem and circulation models will begin to aid in answering important management questions, yet there have already been data gaps identified. Filling these gaps will require combining new data collection and monitoring in collaboration with existing efforts such as those by the HiOOS, the NWS, the USGS, and The Kohala Center. An initial step is a PIFSC-led 10-day cruise to the Kona region in July 2011, and we have already begun interacting with partners to understand the best research plan for this pilot monitoring portion of the IEA.