Hawaii Marine Gap Analysis, Noelani Puniwai, Hawaii Natural Heritage Programme

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The Marine Gap Analysis Project (MGAP) has become a preliminary step in assessing available information on near-shore waters throughout the main eight Hawaiian Islands. Collaborating with principal agencies, becoming familiar with marine modelling programmes, understanding baseline knowledge, and collecting community opinions has been our primary accomplishments. Hawaii MGAP was administered within a research agency, the Hawaii Natural Heritage Program, part of the University of Hawaii System. After three years of data compilation and integration, limited spatial data has become available to comprehensively map the near-shore environment and biological features around the main eight Hawaiian Islands. Baseline information such as habitat maps, bathymetry, rugosity and oceanographic patterns have not been completed state-wide. Consequently, MGAP planners used various proxies and information sources to meet their planning needs.

Process

The principles of gap analysis are to identify those areas or habitats not in conservation by assembling available information on species and habitat distribution. Concurrently, the ideal conservation targets and species lists are being identified. These two processes must happen together or else data collected may not include the intended conservation targets. We found that first defining conservation targets, then assembling pertinent conservation information increased the efficiency of the process. Important products of this process are an understanding of data needs, a detailed record of information gaps and an inventory of information gathered thus far. Even in the U.S., we have incomplete data and to reach our goals we must seek knowledgeable people with whom we can collaborate and inventive proxies to map our targets.

Conservation Targets

Our ideal conservation targets included: rugosity (habitat complexity, depth of holes), oceanographic patterns (connectivity, source populations), habitat maps (at various scales), ecological structure (age, structure) unique/rare species distributions, biomass, and biodiversity. However, we have acknowledged the lack of spatial data gathered on these targets and expanded our analysis design principle to devise a scenario that *'included a representation of all biological features and regions'*. We did not have enough data to identify areas needed for conservation, but we could select a range of habitats around each island. Clearly defining the purpose of your design principle makes apparent to users and managers the intent of the analysis and focalizes the conservation targets and goals.

Our coarse filter targets reflected an attempt to identify the range of general habitats found in the islands regardless of prior research levels and to spread the solution throughout the main Hawaiian Islands. We achieved this by including areas off each island, nearshore and offshore depth zones, high and low wave height shorelines, steep/gentle coastlines, broad habitat types and a few others (see Figure 49).

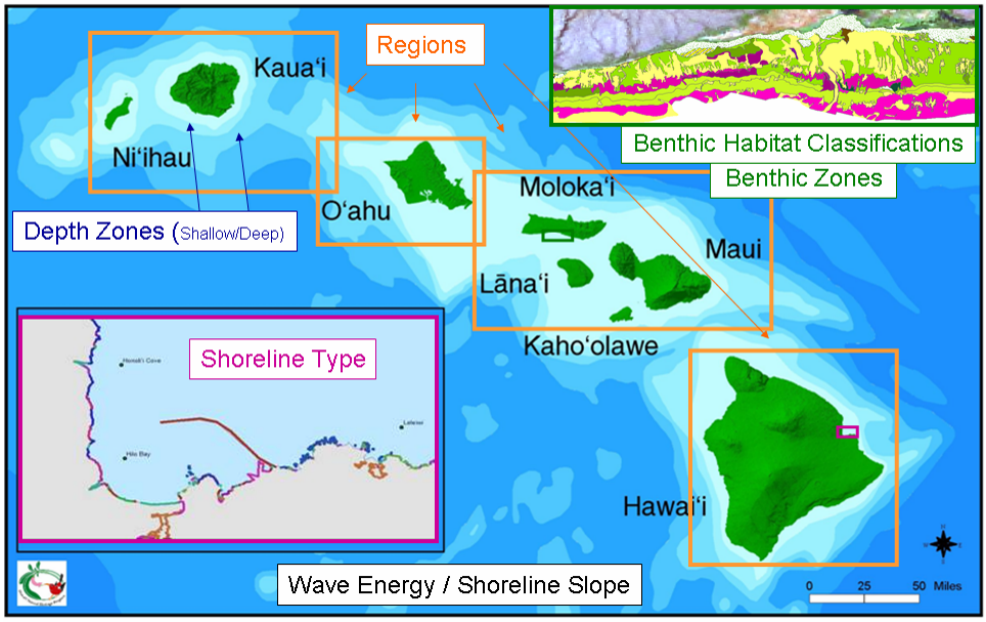

Figure 1. Examples of some of the most common Community Target data used in identifying a range of habitats. Our goal was to include a comprehensive sample of habitats distributed throughout the island chain, not considering health or biodiversity levels.

Mapping of targeted species or indicators (fine filters) also had a lack of spatial data, thus much of these maps were created in-house with the assistance of "water people": knowledgeable marine tourism guides, local researchers, managers, aquarium collectors, and elders in the community. This source of alternative data was used to identifying species distributions and unique locations, information not found (or not easily shared) in most scientific research projects. Water people were more willing to contribute their knowledge then most researchers, understanding the greater need of collective data used in management (see Figure 50). Assistance from this water community helps garner their support in conservation efforts and demonstrates respect of their accumulated knowledge. The compilation of this data into one location will assist communities in the future as they seek substantiation for local management initiatives.

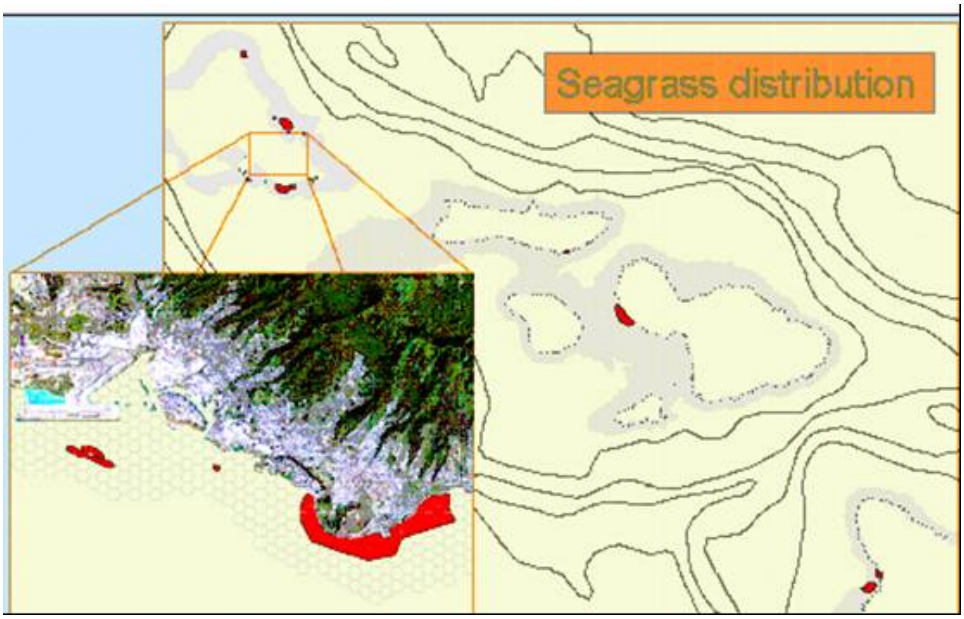

Figure 2: Seagrass distribution was mapped and used as a fine filter species target

Hawaii's Marine Gap Analysis Program has begun accumulating the broad array of information needed to effectively manage the marine environment; a perpetual process. Interim goals will include developing a better understanding of human impacts on marine health, social demands on resources, accessing unsurveyed areas or locations with limited data and the compilation of this information into an organized database. There is no result or finished product. Our gap analysis is a working understanding of management needs overlapped with community concerns, available information, and a goal for preserving habitats in the future.