



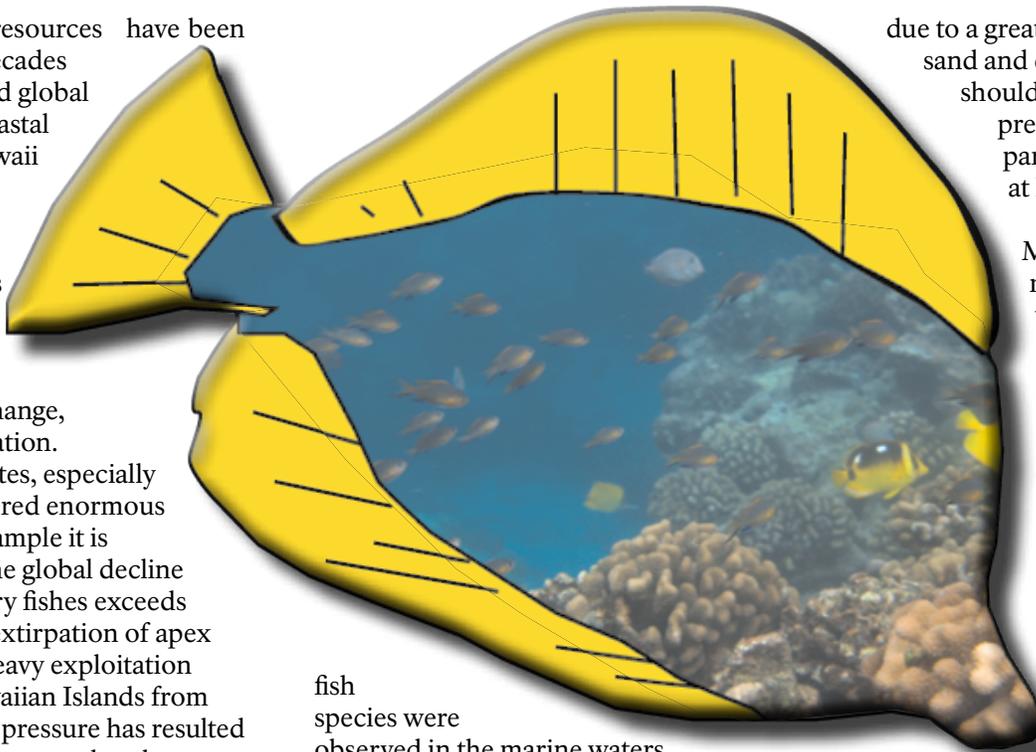
Nearshore Vertebrates in Four Hawai'i Parks

The ocean's resources have been dwindling for decades both on local and global scales. Today, coastal resources in Hawaii and elsewhere are facing unprecedented negative changes due to factors such as coastal development, global climate change, and overexploitation. Marine vertebrates, especially fishes, have suffered enormous declines. For example it is estimated that the global decline of large predatory fishes exceeds 90%. The near-extirpation of apex predators and heavy exploitation in the main Hawaiian Islands from intensive fishing pressure has resulted in a stressed ecosystem that does not contain the full complement of species and interrelationships which would normally prevail.

To help document this trend, a recent inventory for marine vertebrates was done at four national park units in Hawaii: Kalaupapa National Historical Park (NHP), Pu'ukoholā Heiau National Historic Site (NHS), Kaloko-Honokōhau NHP, and Pu'uho'oua o Hōnaunau NHP.

Marine ecosystems such as subarctic areas, kelp forests, and coral reef communities present unique challenges for scientific study, monitoring, and conducting biological inventories. To collect data on the reefs, divers must frequently work in difficult environmental conditions and in fragile communities where most organisms take shelter in holes and crevices. However, in order for organizations to effectively manage these resources, coral reef communities must be identified and their current conditions documented.

Despite these obstacles, a total of 178



fish species were observed in the marine waters adjacent to all four parks, including 48 endemic species. Although the greatest number of fish species were found at Kaloko-Honokōhau NHP, the park with the most overall fish by number of fish and weight was Kalaupapa NHP. Kalaupapa NHP's underwater habitat is characterized by large boulders and low (less than 10%) coral cover. Pu'uho'oua o Hōnaunau NHP and Kaloko-Honokōhau NHP contain fewer and generally smaller fish, and the habitats consist of smaller volcanic rocks with more coral. Pu'ukoholā Heiau NHS supported the fewest fish

due to a greater proportion of sand and degraded habitats. (It should be noted that fishing pressure in W. Hawai'i parks is also greater than at Kalaupapa NHP.)

Marine reptiles and mammals such as threatened green sea turtles (*Chelonia mydas*), dolphins, and whales were commonly observed in three of the four parks. The endangered Hawaiian monk seal (*Monachus schauinslandi*) is a frequent visitor to Kalaupapa NHP, and has been observed at the

other parks as well.

This inventory adds to the crucial foundation of knowledge from which to assess future conditions of marine vertebrates in these four national park units. Knowing what our shared resources are like now will help us to detect how they are changing at a later date. Through educated and collective stewardship of the nearshore communities, let's strive to achieve a future where conditions will only improve each time we survey or monitor underwater.



For the complete report, please visit: <http://www.botany.hawaii.edu/faculty/duffy/techr/168/v168.pdf>

Can you guess what this is ?

A. *(Diodon hystrix)*
The skin of a porcupinefish