Rockfish Barotrauma and Discard Mortality Research Update

The Oregon Department of Fish and Wildlife's Marine Resource Program has been conducting research aimed at developing spatial management and selective retention tools for marine fisheries involving rockfishes. One research focus is identifying the severity of injuries sustained by rockfishes during capture, and developing release methodologies to maximize survival when rockfishes must be released due to non-retention regulations.

Research conducted in the laboratory has shown that black rockfish acclimated to the equivalent pressure of 100 ft (3 atmospheres) all had ruptured swim bladders when forced to ascend to surface pressure, and showed all the same visible signs as fish brought to the surface in the wild. However, following this treatment, mortality was only 3% (97% survival) after 20 days in recovery tanks.

Field experiments using a video-equipped underwater release cage with rockfish captured from depths of 20 – 90 fm showed that most species exited the recompression cage in an oriented fashion and swam away and down. Ten different species were observed using this system, and the behavior data showed that species respond in different ways to barotrauma, so the results from one experiment may not be applicable to other species. For example, blue rockfish and to a lesser degree, widow rockfish, did not appear to be in good condition at release, despite their more pelagic ecology. They frequently displayed an inability to orient vertically, and in some instances did not swim but simply tumbled or drifted away. Although most individuals of most species showed good orientation and swam off, the long-term survival of these recompressed fish remains unknown. Currently, ODFW is combining recompression releases with telemetry to evaluate longer-term survival in yelloweye rockfish, and is also working on physiological symptoms, and a detailed evaluation of recovery following barotrauma.

These studies have identified a paradox in that the physical signs associated with barotrauma in rockfishes are very serious (e.g. exophthalmia, inverted esophagus, ruptured swimbladder, embolism, etc…), yet the documented mortality rates in the laboratory for recompressed black rockfish and behavioral indicators of fish condition at release after recompression are good.

To date, OSU extension service and ODFW have provided advice to anglers on potential release methods that could be utilized with discarded rockfish (See Information Report 3). We are continuing barotrauma research in 2006 and will have more information in the fall. As much of our current information is currently in peer review, we would be happy in the future to make a more detailed report or presentation to the council if desired.