Revised Draft Gulf Council Policy on the Use of Venting Tools and Descending Devices

Policy Statement

The Gulf of Mexico Fishery Management Council encourages the use of descending devices or venting tools as appropriate when releasing fish. The purpose of this policy statement is to maximize the likelihood of survival of released fish.

Purpose

Fish that survive catch and release contribute to the spawning stock biomass and are available to be captured again. This policy helps to achieve the objective of National Standard 9 of the Magnuson-Stevens Fishery Conservation and Management Act, which states that conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

Background

In the natural environment, fish are subject to water pressure that increases with depth. For example, at 33 feet, the water pressure is double that on the surface. At 66 feet the water pressure is 3 times as great, and at 99 feet it's 4 times as great. Most fish have swim bladders that allow them to compensate for the pressure and control their buoyancy. When a fish swims up or down, the amount of gas in the swim bladder decreases or increases to maintain neutral buoyancy. However, when a fish is caught on hook-and-line, it may be brought to the surface faster than the ability of the swim bladder to compensate. Expansion of the swim bladder causes displacement of other internal organs, and in some cases if the gas pressure becomes too great, the swim bladder may rupture, releasing gas into the fish's abdominal cavity. At this point, the fish can no longer regulate its buoyancy. This collection of pressure related injuries is called barotrauma. A fish experiencing barotrauma will have a distended body, and will be unable to swim down when released. In some cases, the pressure may force the stomach to become everted and jut out from the fish's mouth.

When a fish is experiencing signs of barotrauma, and it is unable to swim down on its own, the use of descending devices or venting tools to assist the fish in returning to depth may be appropriate. If used appropriately, both venting tools and descending devices can help improve the survival of released fish. For example, in a recent study, surface released fish (non-vented and not descended) were 3 times as likely to suffer mortality compared to descended fish and 1.9 times as likely to suffer mortality compared to vented fish (Curtis et al. 2015).

The use of such devices may not be necessary in every situation (e.g., when fishing shallow depths). When used inappropriately, venting tools do not contribute to the survival of reef fish, and may even cause increased stress and additional damage to vital organs (Wilde 2009; Eberts

and Somers 2017). Thus, care should be exercised when using these devices. Recent studies recommend use of descender devices over venting in most circumstances; although, venting is preferred when releasing exceptionally large fish, or if the number of fish captured simultaneously makes descending and unviable option. Even when venting tools and descending devices are used properly, survival can be affected by factors such as depth, hook trauma, physical overexertion, organ injury from barotrauma, water temperature differentials, and handling time (Pulver 2017; Campbell et al. 2014). Thus, angler should seek to minimize handling stress whenever possible.

Reef Fish Amendment 27/Shrimp Amendment 14 (GMFMC 2007), implemented in 2008, required reef fish fishermen to use non-stainless steel circle hooks when using natural baits, as well as venting tools and dehooking devices to reduce mortality of released fish. Because the requirement to "use" venting tools did not specify when venting should be used, the rule was interpreted to mean that fish should always be vented when released. As a result, fishermen would sometimes vent reef fish that were not in need of venting. This requirement also either precluded the use of alternative tools such as descending devices or subjected the fish to additional unnecessary handling stress. For this reason, the venting tool requirement was repealed in 2013 (GMFMC 2013).

In recent years, a number of descending devices have been developed to assist fishermen in returning reef fish to depth. The use of descending devices is gaining acceptance and popularity in the fishing communities. Under the NOAA Fisheries National Saltwater Recreational Fisheries Policy Implementation Plan, NOAA Fisheries has distributed thousands of fish descending devices to anglers, both directly and through grants to states and Marine Fisheries Commission partners (NOAA Fisheries 2017). At the same time, the use of venting tools, while no longer required, can still reduce discard mortality when used correctly and under the appropriate conditions.

Release mortality estimates for reef fish range from 5% (recreational fishing in nearshore waters) to 90% or higher (commercial longlining in deep waters). During the period when the use of venting tools was required, the red snapper assessment assumed a reduction in discard mortality rates for fish that were vented (Table 2.1.1).

Table 2.1.1. Estimated red snapper release mortality rates with and without venting.

Stock	Estimated Release Mortality Rate	Assessment
Red snapper	Depth-dependent 10%-11% recreational with venting 21%-22% recreational without venting 55%-88% commercial with venting 74%-95% commercial without venting	SEDAR 31 (2013)

For descending devices, the Pacific Fishery Management Council (PFMC) estimated the impact of using such devices on several of their managed stocks. The estimates provided to the PFMC are shown in Table 2.1.2.

Table 2.1.2. Total discard mortality (%) for cowcod, canary and yelloweye rockfish reflecting the use of descending devices.

Species	Depth (fm)	Current Surface Mortality	Mortality with Descending Devices
Canary Rockfish	0-10	21%[1]	20%[1]
	10-20	37%	20%
	20-30	53%	20%
	30-50	100%	33%
	>50	100%	31%
Yelloweye Rockfish	0-10	22%	20%[1]
	10-20	39%	20%
	20-30	56%	20%
	30-50	100%	22%
	>50	100%	31%
Cowcod	0-10	21%	21%[2]
	10-20	35%	35%[2]
	20-30	52%	37%
	30-50	100%	37%
	>50	100%	31%

[1]The value reflects mortality rates from the 10-20 fathom bin since mortality rates are expected to be lower in shallower depths and less than surface mortality.
[2]The value reflects surface mortality since mortality rates for descending devices are not expected to exceed surface release.
Source: PFMC 2013

More recently, an analysis was conducted in the south Atlantic on the use of descending devices on 19 deep-water grouper (Scamp (N = 8), Snowy Grouper (N = 7), and Speckled Hind (N = 4)). Fish were caught in depths of 60–120 meters (197-394 feet), tagged with ultrasonic coded transmitters, and released using Seaqualizers back to depths of either 46 or 61 meters (150 or 200 feet). The fish were then tracked for 14 days. After 14 days, survival of the released fish was estimated at 50% (95% confidence interval = 10% - 91%). While this survival rate is low, it's higher than the assumed survival rate of 0% without using descending devices (Runde and Buckel 2018).

Venting tools and descending devices can be either commercially manufactured or home-made. There is no legal definition for these devices. For the purpose of this Policy, the following are suggested definitions.

> Venting tool: A venting tool is a device capable of penetrating the abdomen of a fish in order to release the excess gases accumulated in body cavity when a fish is retrieved from depth. A venting tool must be a sharpened, hollow instrument, such as a hypodermic syringe with the plunger removed, or a 16–gauge needle fixed to a handle. A larger gauge needle is preferred in order to allow more air to escape rapidly. A device that is not hollow, such as a knife or ice pick, is not a venting tool and will cause additional damage.
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> Descending device: A descending device is an instrument that will release fish at a depth sufficient for the fish to be able to recover from the effects of barotrauma, generally 33 feet (twice the atmospheric pressure at the surface) or greater. The device can be a weighted hook, lip clamp, or box that will hold the fish while it is lowered to depth. The device should be capable of releasing the fish automatically, releasing the fish by actions of the operator of the device, or by allowing the fish to escape on its own. Since minimizing surface time is critical to increasing survival, descending devices should be rigged and ready for use while fishing is occurring.

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