



Dan Wolford
Coastside Fishing Club

A Recreational
Initiative

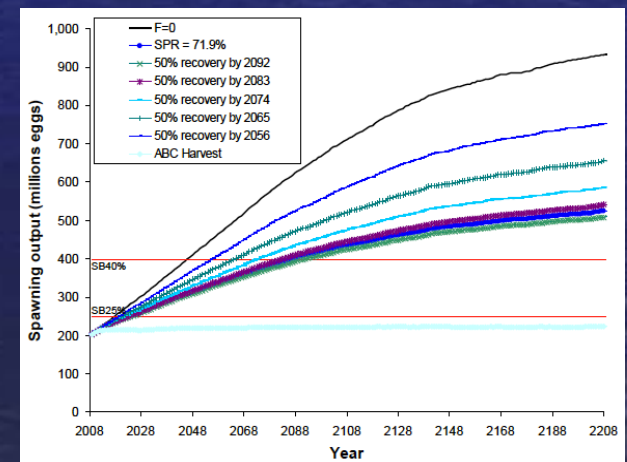
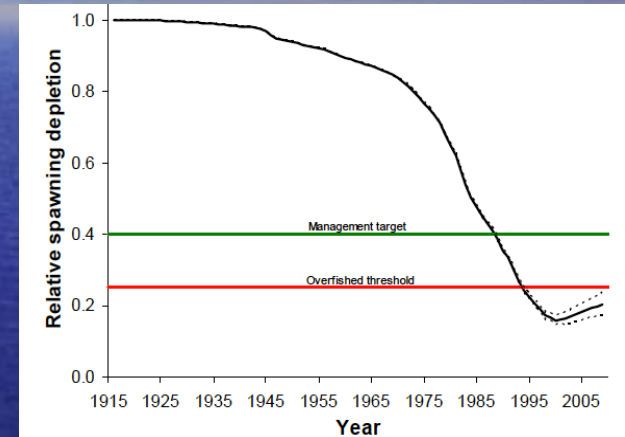
Release Mortality Symposium

West Coast Success Story



The Problem – Fish Stocks and Recreational Opportunities were in Decline

- During mid to late 20th century many groundfish stocks saw deep declines
 - Effective management measures were put in place in the 90's
 - Time and area restrictions
 - Bag limits constrained
 - Non-retention of overfished stocks
 - Overfishing was stopped
- Stocks are currently rebuilt on all but one rockfish stock - Yelloweye
 - Balance the biology of the fish, with Magnuson community welfare considerations





Motivation – Improve Recreational Opportunities

- Area Closures avoid contact with constraining species
 - Time closures limit seasons based on constraining species
 - Non-retention creates regulatory floaters
- Can we offset by creative avoidance strategies and gear?
 - Can we offset by selective release of constraining species with acceptable mortality?
 - Can we implement regulations that are enforceable and acceptable to the fishermen?

Eliminate Floaters !



Recreational Initiative

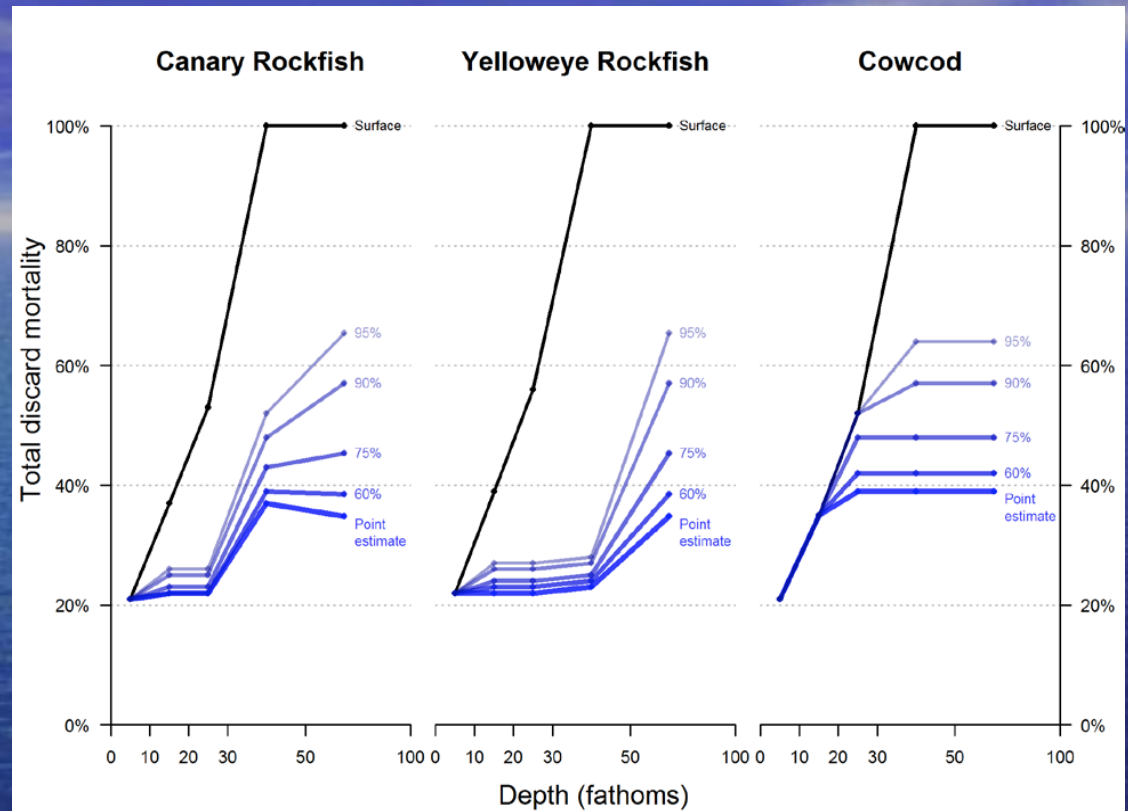
– Get Creatively Involved

- On the water investigations
 - Can we avoid regulatory discards in the first place?
 - What happens if we could re-pressurize the fish?
- Sponsor academic research
 - At Oregon State and elsewhere
- Find national sponsors
 - FishSmart Initiative - <http://www.fishsmart.org>
 - National and regional workshops
 - Video: <https://youtu.be/EiZFghwVOyI>
- Bring to regulatory arena
 - PFMC modification of release mortality when recompression devices are used
- The hardest part: **Outreach to the public**
 - Incorporate this into everyday recreational practice



Depth Based Mortality

Large confidence intervals reflect small size of the on-the-water data base



- Mortality factors to account for survivability of released rockfish
 - Depth related Barotrauma factors
 - Constant Hooking and handling factors
 - Constant Long term survivability factors



We Hate Floaters!

But what to do about them?

"Frankonator" from 2004



Rougheye Rockfish
July, 2010 ~700ft

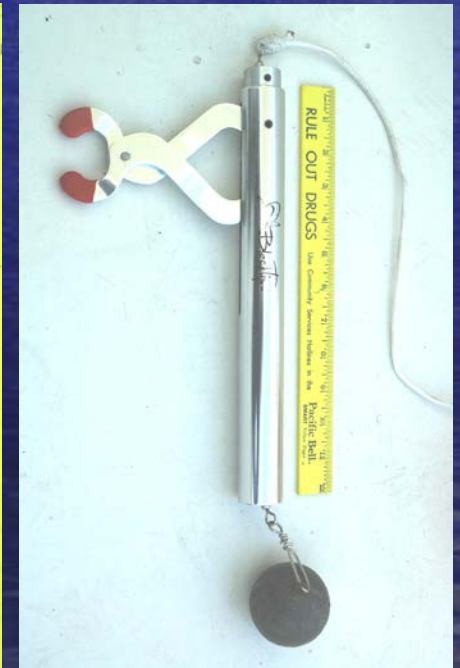


Public display Feb, 2011





Barotrauma - Get 'em Down!



October 7 – 8, 2019



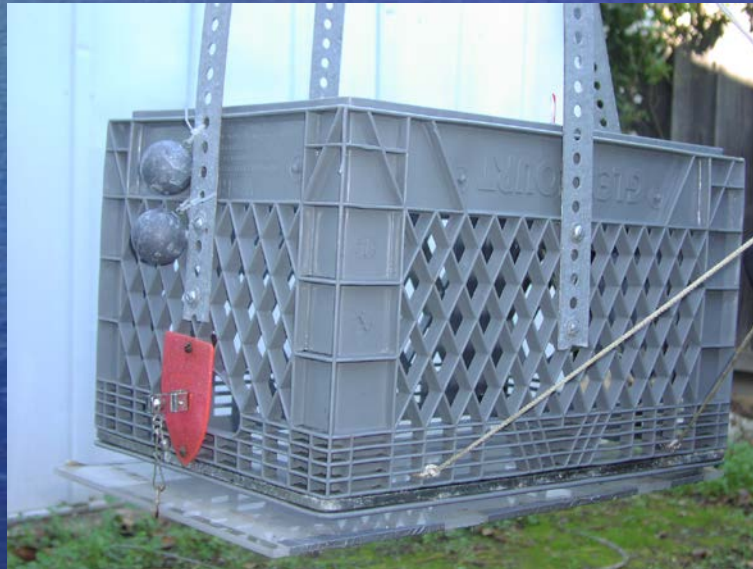
Modifications to the Milk Carton





Bigger "Milk Carton" – with trap door

- Trap door also created a photographic background for the camera mounted on the frame above the container
- Replace the "diver" latch with a SeaQualizer !





Clam Shell milk carton

- Two lines required
- One to raise and lower, the other to open and close
- Awkward to use





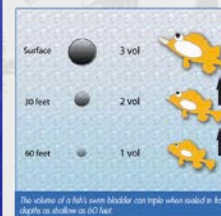
CDFW Outreach Program

- Implemented in 2008
 - Encourages descending devices
 - Discourages venting devices
 - Concern for infection and improper use
 - Voluntary program
- Coastside Fishing Club augmentation
 - Copy and distribution
 - Include fish ID brochure
 - Translation to other languages

WHY ARE ROCKFISH PRONE TO PRESSURE-RELATED INJURIES?

Every rockfish has a gas-filled organ called a swim bladder that allows the fish to gently control its buoyancy. By deflating its bladder, a fish can descend more easily. By inflating it, its ascent is assisted. When a fish is caught and reeled in, this mechanism for moving vertically in the water column is thrown out of whack. Depending on the depth at which the fish was caught, a fish's air bladder may swell so much its stomach is forced out its mouth. The eyes may bulge and other organs can be injured as well. Fish suffering from pressure-related injuries are said to be experiencing barotrauma (pressure shock). Without intervention, a fish with barotrauma may die from the progression of its wounds or succumb to temperature shock or predation.

"Puffers" – overly inflated fish that cannot re-inflate on their own – are especially easy targets for sea gulls and sea lions.



Aluminum conservation information of this document are available upon request. If reasonable accommodation is needed, call DFG at (916) 337-8971. The California Relay Service for the deaf or hearing impaired can be reached from TDD phones at (800) 735-2929.

FISH CAN SURVIVE BAROTRAUMA

Amazingly, rockfish that look dead at the surface can "pop" back to life if quickly returned to a native depth range. Because of this, rockfish that you miss, or want to use back should be quickly recompressed.



TOP FIVE REASONS TO SEND 'EM DOWN

Why should you care about helping a released fish return to depth?

1. Floating fish are a waste of the resource.
 2. Some populations of prohibited species, such as canary and yelloweye rockfish, may take decades to rebuild.
 3. High-grading is illegal and selects for smaller fish in the gene pool.
 4. Venting fish may cause more harm than good.
 5. Re-descending fish can increase their chances of survival.
- Catch-and-release practices work best when you can help with fish survival. Helping fish get back down is good for the resource and the sport.



ROCKFISH-BAROTRAUMA MYTHS

- Myth:** Reeling a fish in slowly prevents barotrauma.
- Fact:** Rockfish cannot acclimate to the pressure drop even when reeled in slowly.
- Myth:** The organ protruding from a "popped" fish's mouth is the swim bladder.
- Fact:** It is the stomach! Never vent the stomach or try to force it back inside the mouth.
- Myth:** You can tell by looking whether a fish will survive or die.
- Fact:** When properly recompressed, even fish with severe barotrauma can survive.

ROCKFISH-BAROTRAUMA SCIENCE

According to published results of a Sea Grant study led by biologists at Cal State Long Beach, the degree of barotrauma in a fish is not a reliable predictor of its survival. The most significant predictor of post-release survivorship is the time a fish spends at the surface.

In experiments with several species of common Southern California rockfish, 83 percent of fish caught at depths between 217 feet and 350 feet, survived when returned to depth within 2 minutes. The odds of a fish dying following recompression nearly doubled with every 10-minute increase in time at the surface. Tagging and recapture studies showed some released fish were still alive 1.5 years later.

For current recreational groundfish fishing regulations, call (831) 649-2803 for recorded information or visit the California Department of Fish and Game website at www.dfg.ca.gov/marine/regulations.asp.

This brochure was a collaboration effort of California Sea Grant, Oregon Sea Grant and University of Southern California Sea Grant. Printing was funded by the California Department of Fish and Game.

PRACTICE THE FOLLOWING TECHNIQUES AND SAVE ROCKFISH LIKE THIS!



There are many ways of returning a fish to a depth at which it can recompress. Your choice may depend on the size of the fish you usually catch, your experience as an angler, sea conditions and cost.



Upside-down milk crate, weighted and attached to a rope: Crate is dropped over the fish and then, with the buoyant fish inside, lowered to a minimum depth of 60 feet and kept down until it can swim out on its own. Caveat: In rough seas, fish can escape prematurely and the crate may bang against a fish's extended eyes. Try lowering the fish down gently or paint crate's inside with a rubberized coating to smooth sharp edges.



Inverted barbed hook with weight: Hook fish through lower lip from inside to outside, to keep hook from puncturing an extruded stomach and to prevent line cut to eyes. You can also hook a fish through the membrane on its upper lip from outside to inside, which some say makes for easier release. In both cases, the weight must lead the fish into the water and be heavy enough to sink to the desired depth. Fish is released with a sharp jerk on the line. Caveat: Hook can puncture an extruded stomach. Once a fish reaches a depth at which it regains muscle coordination, it may wriggle free prematurely. Method works best with smaller fish.



Commercial fish descenders: There are a variety of practical, easy-to-use fish descenders on the market. The best one for you may depend on the size and species you catch. For more information, visit www.descenders.com and <http://gfi-e-down.com>.



Spanish Translations (I hope)

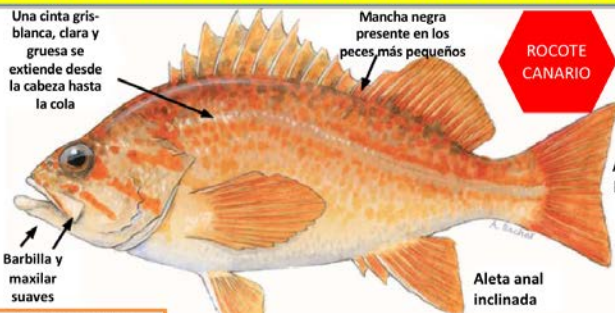


El rocote canario en comparación al rocote bermejo



El rocote canario y el rocote bermejo son identificados incorrectamente con frecuencia. Este folleto ofrece características que se pueden usar para diferenciar ambas especies.

EL ROCOTE CANARIO NO SE PUEDE CONSERVAR EN CALIFORNIA

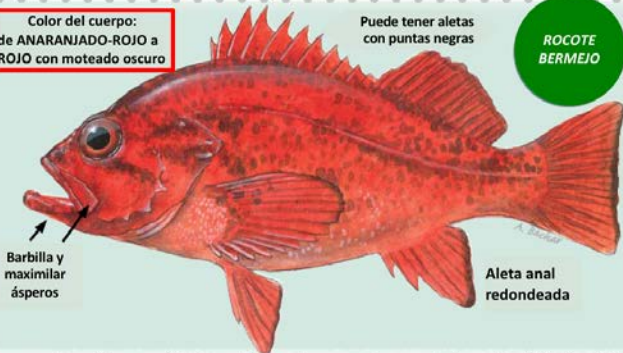


Color del cuerpo: ANARANJADO FUERTE

Color del cuerpo: de ANARANJADO-ROJO a ROJO con moteado oscuro

Puede tener aletas con puntas negras

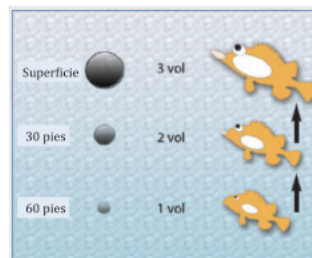
ROCOTE BERMEJO



Para obtener más información, por favor ponte en contacto con tu oficina local del Departamento de Pesca y Vida Silvestre de California.

¿POR QUÉ EL ROCOTE ES PROPENSO A LAS LESIONES CAUSADAS POR LA PRESIÓN?

El rocote tiene un órgano lleno de aire llamado vejiga natatoria que le permite controlar suavemente su flotabilidad. Cuando desinfla su vejiga, puede descender con mayor facilidad; y cuando la infla, recibe ayuda para ascender. Si un pez es atrapado y sacado del agua, este mecanismo para moverse verticalmente en la columna de agua estará fuera de control. Dependiendo de la profundidad en la que el pez es atrapado, su vejiga natatoria puede hincharse tanto que su estómago saldrá por la boca. Los ojos pueden agrandarse y otros órganos también pueden lesionarse. Se cree que los peces que sufren lesiones causadas por la presión experimentan barotrauma (choque de presión). Sin intervención, un pez con barotrauma puede morir debido a la gravedad de sus heridas o puede sucumbir por el cambio de temperatura o ser víctima de los depredadores. Los "flotadores" - peces demasiado hinchados que no pueden bajar nuevamente a la profundidad - se vuelven presas fáciles de las gaviotas y los leones marinos.



El volumen de la vejiga natatoria de un pez puede hasta triplicarse cuando se le saca de aguas poco profundas (60 pies/19 m).

"La vejiga natatoria es a menudo denominada el "bucha".

Los formatos de comunicación alternativos están disponibles a solicitud. Si existe una necesidad razonable, llame al DFG al (916) 322-8911. El Servicio de Acceso para Sordos o Discapacitados Auditivos de California puede ser utilizado desde los teléfonos TDD al (800) 735-2929.

MITOS DEL BAROTRAUMA DEL ROCOTE

Mito: Sacar lentamente un pez del agua evita el barotrauma.
Realidad: El rocote no puede adaptarse a la reducción de la presión aun cuando se la saque lentamente del agua.
Mito: El órgano que sale por la boca de un pez es la vejiga natatoria.
Realidad: ¡Es el estómago! Nunca realice la punción del estómago o intente meterlo dentro de la boca.
Mito: A simple vista se puede saber si un pez sobrevivirá o morirá.
Realidad: Cuando se vuelven a comprimir adecuadamente, incluso los peces con barotrauma severo pueden sobrevivir.

CIENCIA DEL BAROTRAUMA DEL ROCOTE

De acuerdo a los resultados publicados en un estudio de Sea Grant realizado por investigadores de la Universidad del Estado de California en Long Beach:

El grado de barotrauma en un pez no es un indicador confiable de su supervivencia. El indicador más significativo de supervivencia posterior a su liberación lo constituye el tiempo que el pez permanece en la superficie. En experimentos con varias especies de escorpinas comunes en el sur de California, 83% de los peces atrapados entre los 217 y 350 pies de profundidad, sobrevivieron cuando regresaron a la profundidad dentro de los 2 minutos siguientes. Las posibilidades de que un pez muera después de la recompresión casi se duplicaron con cada incremento de 10 minutos de tiempo en la superficie. Los estudios de etiquetado y recaptura mostraron que algunos peces liberados aun estaban vivos después de 1.5 años.

Para regulaciones actuales sobre pesca recreacional de peces demersales, llame al (831) 649-2801 para acceder a la información registrada o visite el sitio web del California Department of Fish and Wildlife en www.dfg.ca.gov/marine/regulations.asp.



Este folleto es resultado del esfuerzo de la colaboración de Sea Grant de California, Sea Grant de Oregon y la Universidad de San Grant de California del Sur, Investigador financiado por el California Department of Fish and Wildlife.

Traducción e impresión adicional a cargo del Coastside Fishing Club





Washington State Outreach

Protect Washington's Rockfish

Washington is home to many rockfish species, which occupy a wide range of depths and habitats. Some populations are healthy, but many are not. In an effort to conserve and rebuild rockfish populations, rockfish must be released throughout most of Puget Sound, and anglers are prohibited from fishing below 120 ft. when targeting bottomfish.

Rockfish can be challenging to identify.

There are 28 species of rockfish in Puget Sound and more off the Washington coast. Anglers are encouraged to learn key features and use picture references to aid identification. A printable guide can be found at:

wdfw.wa.gov/fishing/bottomfish/identification/rockfish

Look for some of these key characteristics:



Canary

Typically three stripes across side of head and gill plate. Body orange mottled with grey. Smooth lower jaw.



Bocaccio

Elongated body. Large mouth with protruding lower jaw. Body orange, olive, or brown.



Vermilion

Typically red or orange mottled with grey and black. Fins may have dark edges. Rough scales on lower jaw and dark eye.



Brown

Dark brown patch or spot on gill cover. Underside of throat and lower jaw pinkish. Fins may be pinkish.



China

Yellowish white freckles. Broad yellow stripe starting on dorsal fin continuing along the body.



Quillback

Prominent spines on dorsal fin above gill plate. Freckles on head/throat. Yellowish saddle markings do not extend to tail.



Black

Large mouth. Body mottled with grey, white belly. Anal fin rounded or slanted forward. Often caught in midwater.



Yelloweye

A large, orange species. Bright yellow eyes with raspy ridges above them. Fins usually have black edges.



Tiger

Strong ridges between eyes. Five or six vertical bars on body. Orange color pales after capture.



Copper

Usually 2 dark bands radiating backward from eye. Light colored band along the last two-thirds of the lateral line.



Yellowtail

Large mouth, yellowish fins. May have pale patches or spots on back. Often caught in midwater.



Sub-adult Yelloweye
Look different than adults. Typically have 1-2 distinct white stripes along the body which fade in their mature.

Accurately Identify and Report Caught & Released Rockfish to WDFW Port Samplers.

Data from recreational anglers is crucial to evaluating rockfish population health, especially for species of concern.

Rockfish grow slowly and most do not reproduce until they are at least 10 years old!

Some rockfish species can live more than 100 years!

Rockfish give birth to LIVE young. Older, larger females have greater success in producing large numbers of healthy young.

Attention Divers!

We need your help to document juveniles of rare Yelloweye, Canary, and Bocaccio in Puget Sound and the San Juan Islands.

Help Us Find These Fish!

1. When you spot these fish take a photo/video of them
2. Note the location, depth and date
3. After the dive send an email to: RockfishID@noaa.gov

Not sure of the species? Take a photo and send it to us anyway!

Send that fish... DOWN!

As fish are brought to the surface, gases in the swim bladder expand causing the stomach and eyes to bulge. This is known as **barotrauma**.



Sending fish with barotrauma to their depth of capture recompresses them, improving short- and long-term survival.

There are several types of devices you can use to send them DOWN:



Depth Pressure Release

Inverted Hooks

Bottom Contact Release

Return fish back to the depth of capture or at least 60 ft.



Get them down quickly: Have your descending device ready. Fish returned to depth within 2 minutes have better survival.



Avoid rough handling: Avoid dropping fish and touch them as little as possible. Use a wet towel/hands to avoid removing the protective slime coat.



Use a descending device that works for you: Consider the fishing location, depth, and type of boat you have. Use a commercial device or make your own!



Protect sensitive species by avoiding them: If you are fishing in an area where you are catching fish you can't keep, it's best to move to another location.

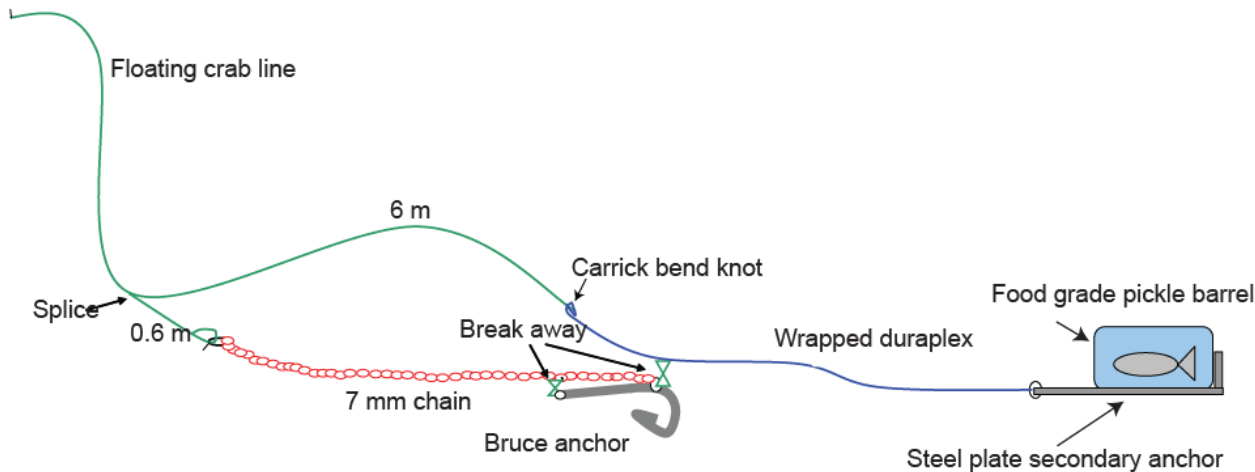
DO NOT VENT!

Puncturing the swim bladder or bulging organs is not recommended as it can cause serious injury or infection, leading to death.

ODFW (Hannah) built 16 "fish friendly" cages



- Cage is very smooth internally
- Screened against amphipods
- Double anchor design isolates cage from mooring line pull
- Heavy steel plate anchor is self-righting – eliminates cage movement



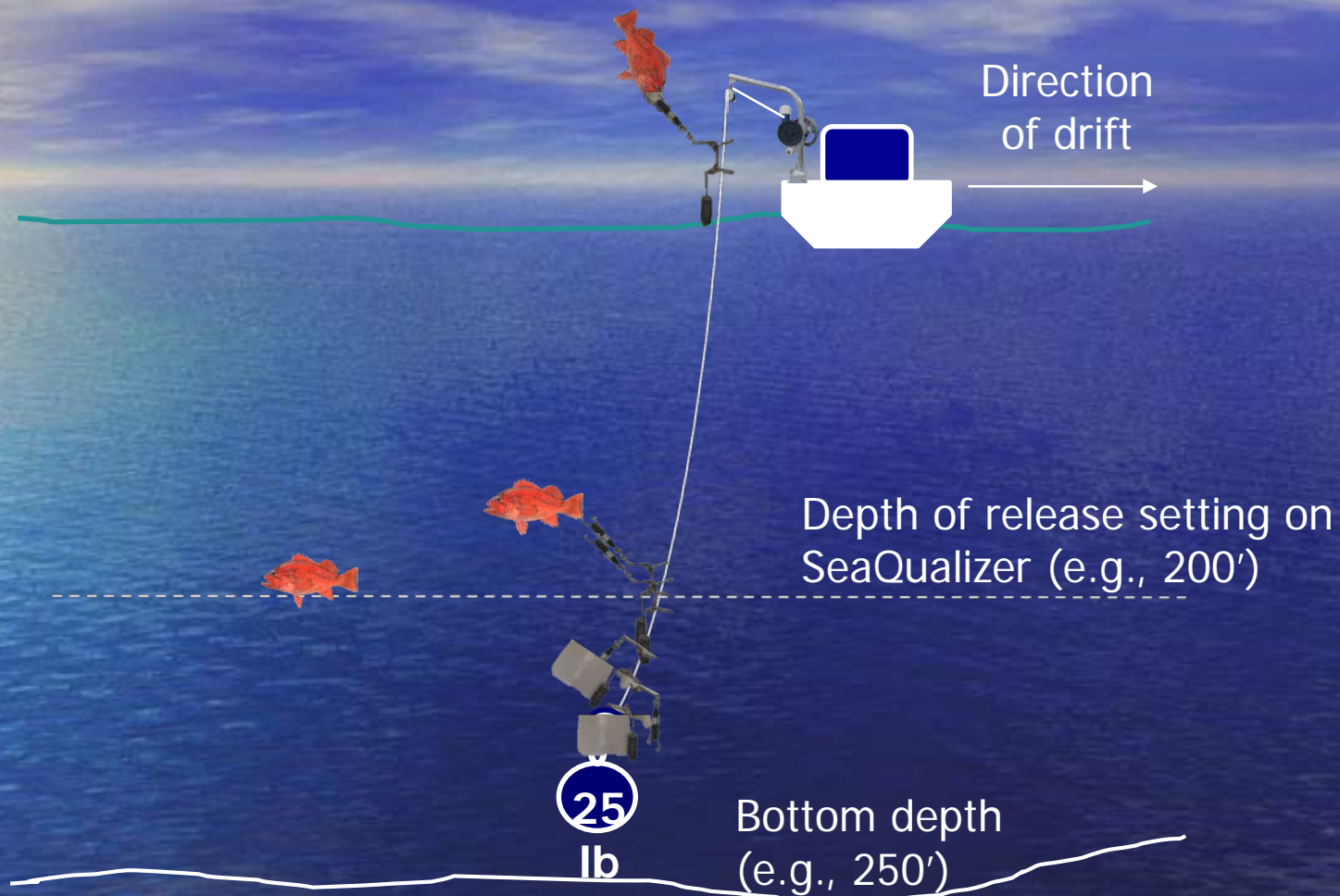
Development of a high-throughput approach for descending shelf rockfish

John Harms¹, Jim Benante¹, Colin Jones¹,
Aaron Chappell², Victor Simon¹, Joe Villareal³

¹ Northwest Fisheries Science Center, Seattle, WA

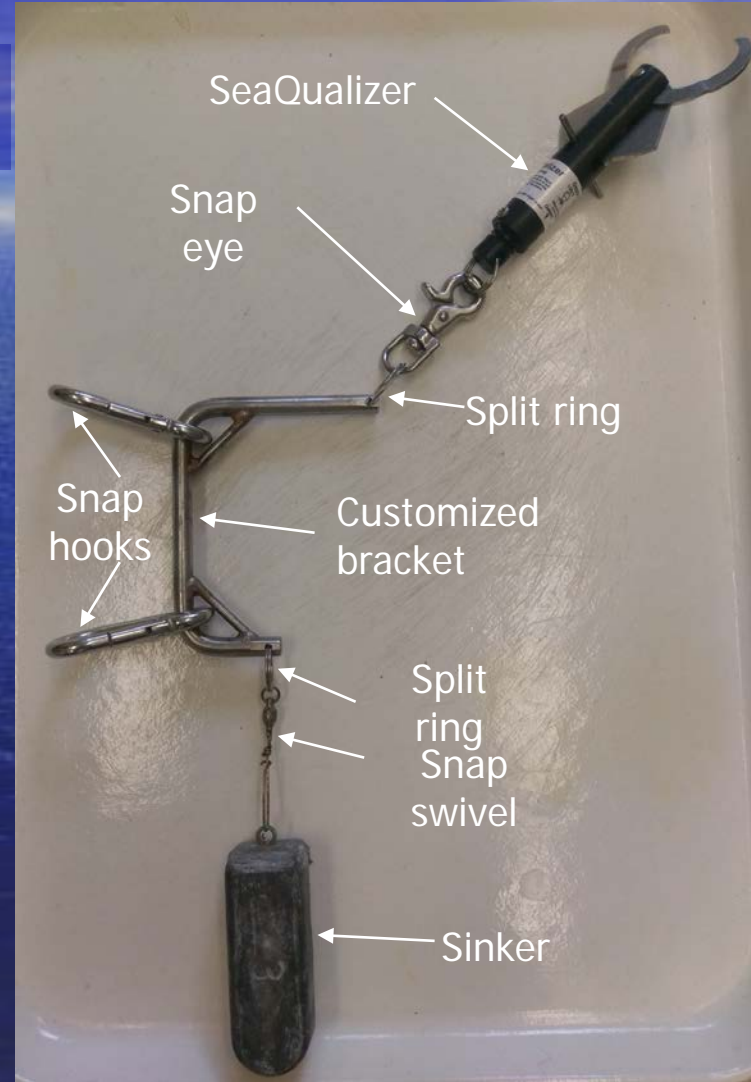
² Northwest Fisheries Science Center, Newport, OR

³ Mirage Sportfishing, Oxnard, CA



Bracket assembly

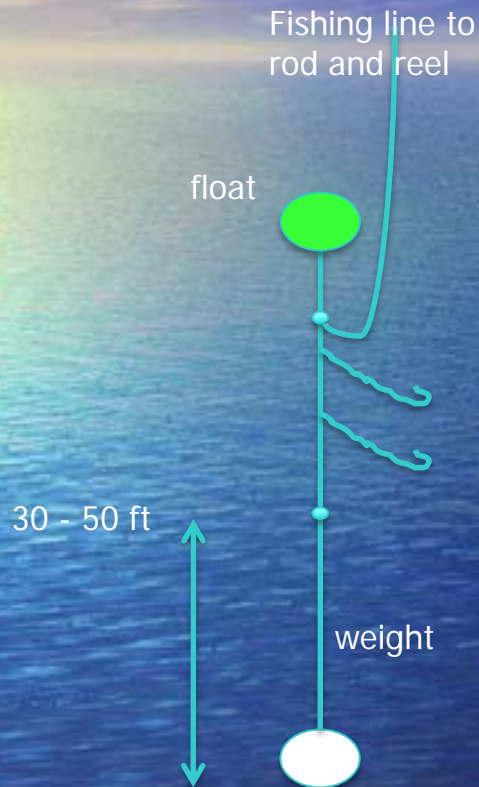
- Customized bracket
- SeaQualizer set to appropriate depth
- Snap eyes and snap swivels allow for quickly swapping out sinkers and SeaQualizers
- Large snap hooks are easy to clip on the downline and minimize friction during descent





Avoidance Strategies

Preclude need for Barotrauma Treatment



- Demonstrated by EFP to
 - Successfully target midwater species
 - Avoid contact with Yelloweye

Directed Fishing Surveys

- Modified H&L gear w/ 25ft leader, targeting semi-pelagic species
- 8,827 lbs fish landed
 - Vermilion, Yellowtail, Chilipepper, Widow RF (90 % of landings)
 - Bocaccio (8.3% of landings)
 - Yelloweye (4) & Cowcod (2) at 0.5% of landings
- Target:Rebuilding Ratio of 10.1:1
- Biological analyses of growth & maturity





Can We Really Make a Difference?

- Recreational fishermen overcome with numbers what we lack in individual take
 - Consider the millions of anglers, and what one less mortality apiece can mean
- Motivation is the key – more opportunity
 - Education – why and how
 - Increased opportunity
 - Longer seasons
 - Fewer closed / restricted areas
 - Larger bag limits
 - Fewer regulatory discards as the populations recover