

## Marine Envenomation and Poisoning

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## Marine Envenomation

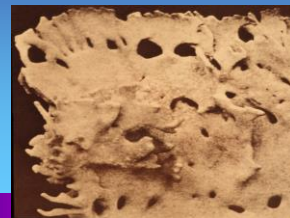
- Increased incidence
- Provoked attacks
- Temperate/tropical waters



## Traumatic Injuries Envenomations Toxic Ingestions

## Coral

- Razor sharp skeleton



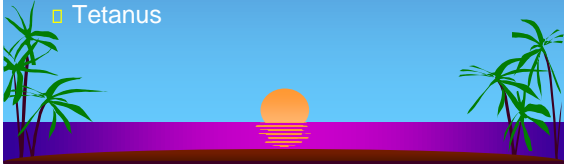
## Presentation

- Pruritic/red welts
- Cellulitis
- Ulceration
- Necrosis



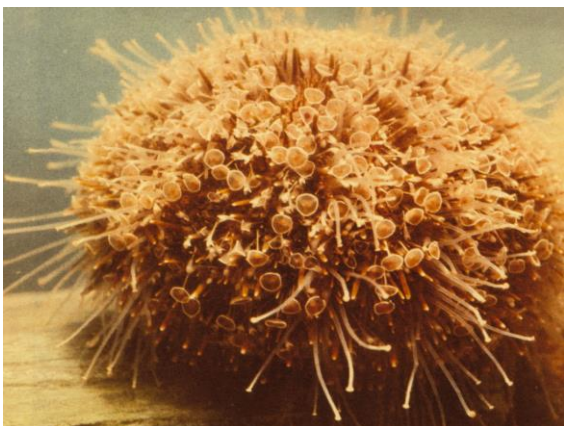
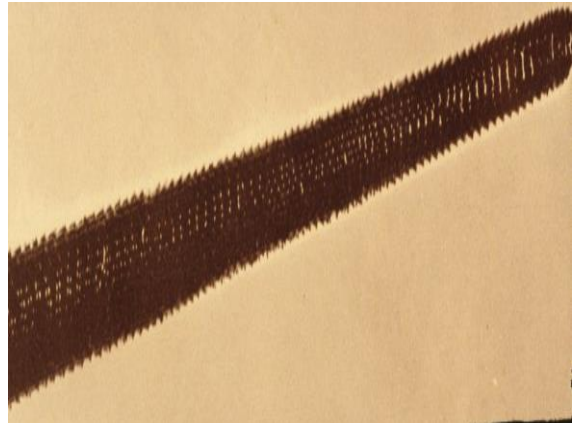
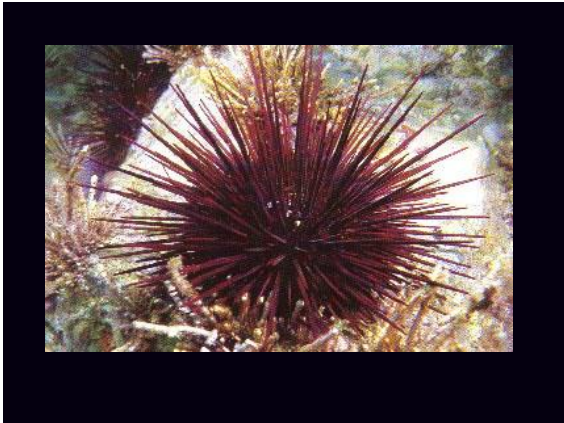
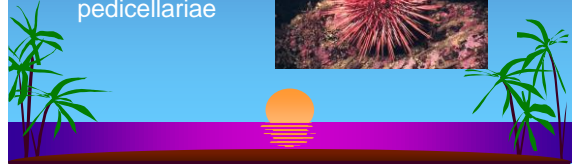
## Management

- Clean site
- Vigorous irrigation
- Hydrogen Peroxide
- Wet-to-dry dressing
- Tetanus



## Sea Urchins

- Beaches, reefs, ocean bottom
- Hard shell
- Spines
- Triple-jawed pedicellariae



## Presentation

- Burning pain
- Myalgias
- Erythema
- Swelling
- Purple discoloration
- Granuloma
- Systemic symptoms



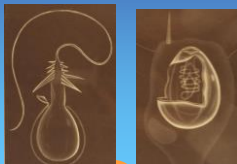
## Management

- Hot water
- Remove foreign bodies
- Vigorous irrigation
- Soft tissue x-rays
- Surgery
- Tetanus



## Nematocysts

- Near mouth
- Outer surface of tentacles
- Venom

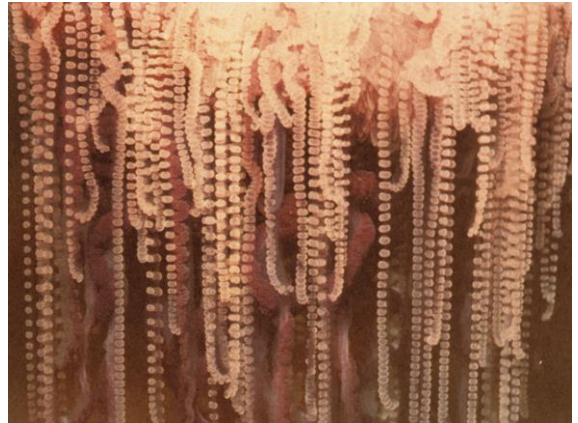






## Hydrozoans

- Portuguese man-of-war
- Fire coral



## Schyphozoans

- Box-jelly fish
- Sea wasp
- Chesapeake Bay sea nettle
- Giant lions mane jelly fish
- Mauve stinger





## Severity of Envenomation

- Species
- Type of nematocyst
- Number of nematocysts
- Age and health of victim
- Previous sensitization



## Mild Envenomation

- Tentacle prints
- Stinging
- Burning
- Pruritis



## Moderate Envenomation

- Local edema
- Desquamation
- Hemorrhage
- Necrosis
- Ulceration



## Severe Envenomation


- Gastrointestinal
- Neurologic
- Cardiovascular
- Respiratory
- Musculoskeletal






## Management

- ❑ Rinse with sea water
- ❑ 5% acetic acid
- ❑ 40% isopropyl alcohol
- ❑ Hot water to tolerance?
- ❑ Baking soda
- ❑ Double glove/forceps



## Management

- ❑ Shave
- ❑ Acetic acid
- ❑ Tetanus
- ❑ HC cream 1%
- ❑ Analgesics
- ❑ Safe Sea



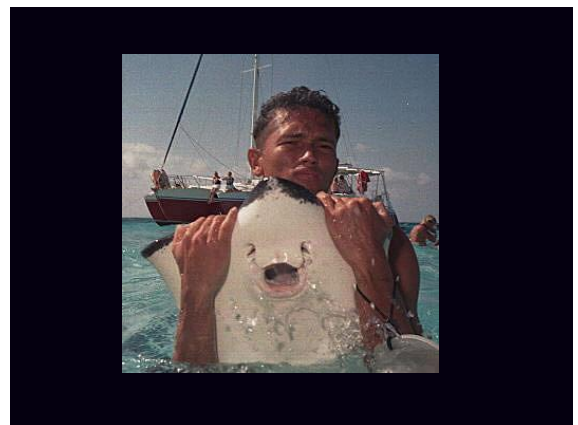
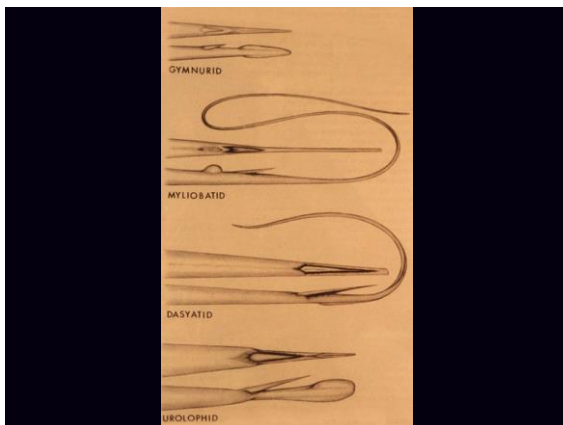
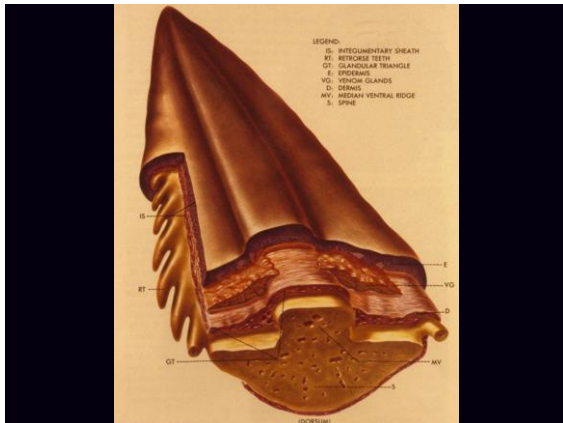
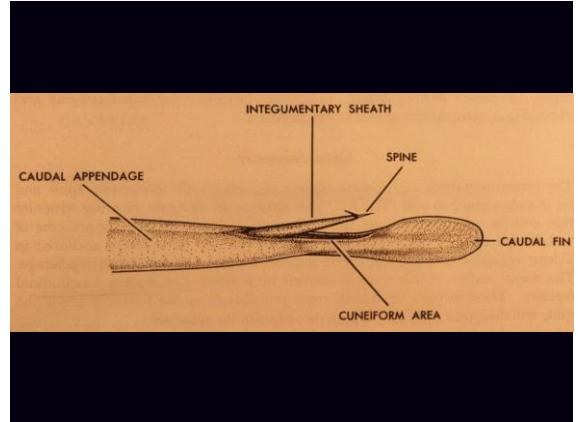
## Irukandji Syndrome

- ❑ Carybdeid species
- ❑ Delayed severe systemic symptoms
- ❑ Pain
- ❑ Catecholamine-like effects
- ❑ Cardiopulmonary decompensation
- ❑ Supportive treatment

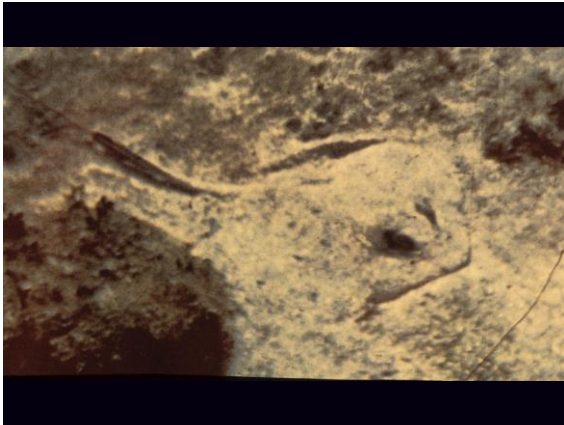
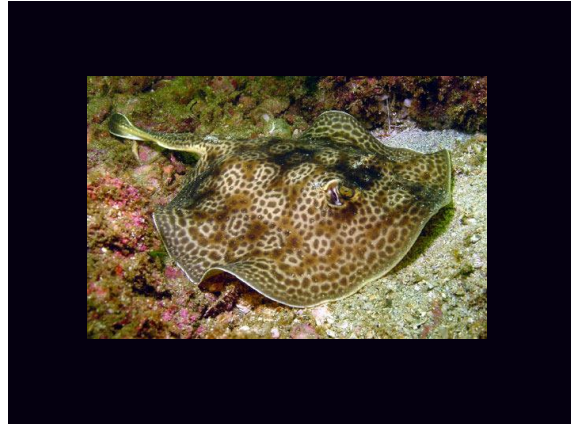
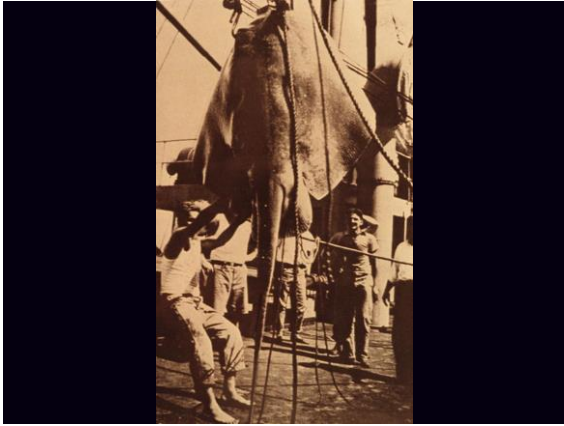


## Stingrays

- Most common marine vertebrate
- 7 species in Atlantic
- 4 species in Pacific
- Venomous spine on dorsum of caudal appendage







**Fla. man stung in the chest after stingray leaps into boat**

Paramedics show Stina Witz the spotted eagle ray that bit a hook-bait in a Florida man's chest.

Stewart General Medical Center's Dr. Eugene Costantini holds a piece of the stingray barb that was removed from 63-year-old James Barakat's chest. Barakat, left, of Light House Point, Fla., was injured Wednesday when a stingray leaped into his boat and stung him, authorities said.





## Presentation

- Intense pain within 10 min
- Peaks 30 to 60 min
- Duration up to 48 hours
- Edema
- Bleeding
- Cellulitis
- Necrosis



## Systemic Symptoms

- Neurologic
- Gastrointestinal
- Cardiovascular
- Musculoskeletal

## Management

- Vigorous irrigation
- Hot water
- Explore/debride wound
- Soft tissue x-rays



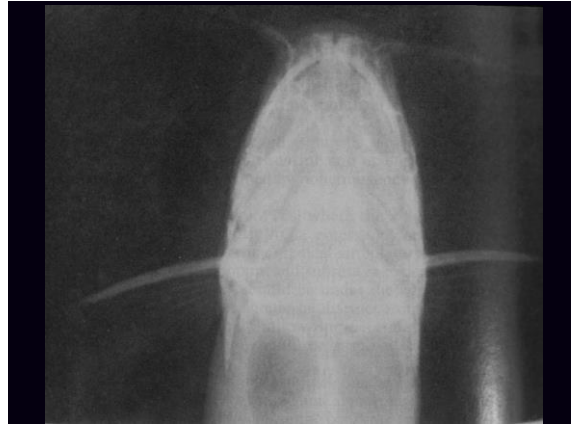
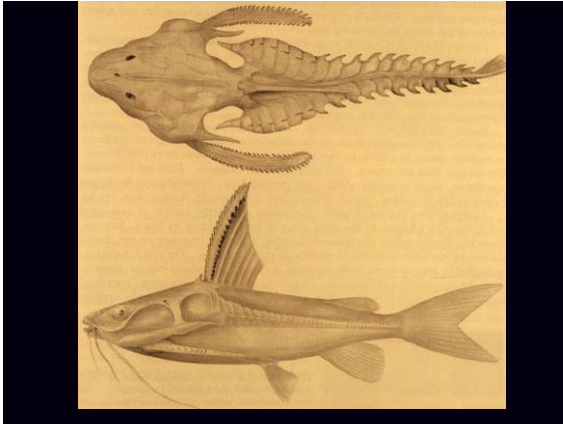
## Management

- Pack open
- Close loosely
- Tetanus
- Prophylactic antibiotics
- Recheck in 24 to 48h

## Catfish

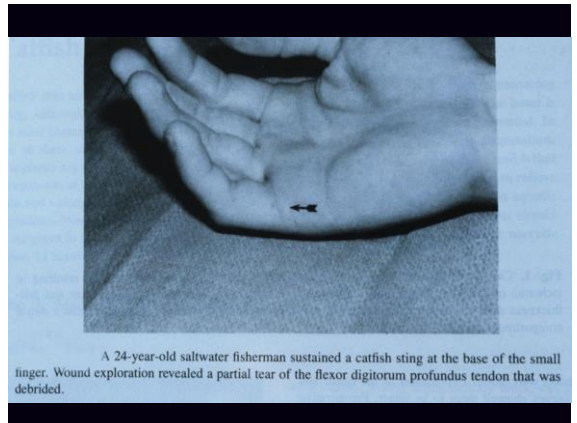
- Fresh water
- Salt water
- Dorsal fin spines
- Pectoral fin spines
- Venom





## Presentation

- Immediate intense pain
- Radiation
- Swelling
- Erythema
- Ischemia



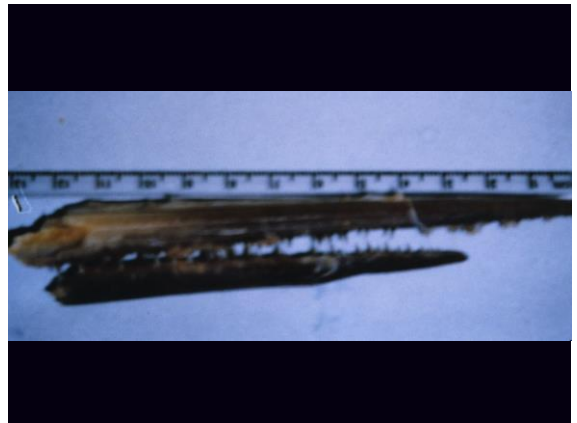
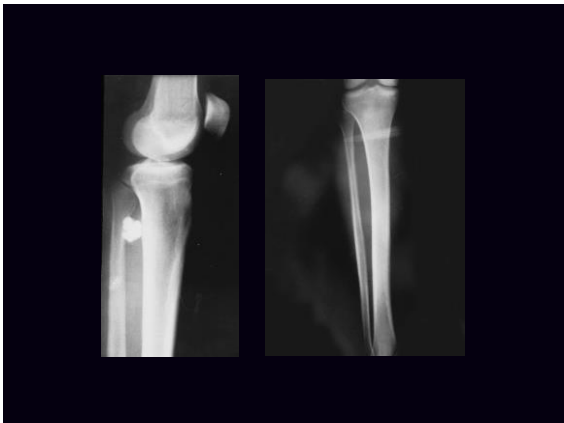
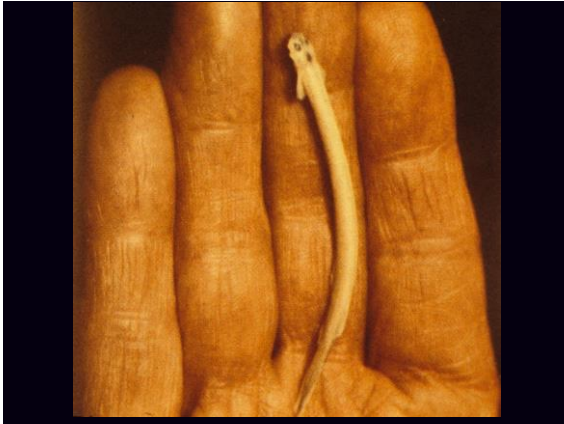
A 24-year-old saltwater fisherman sustained a catfish sting at the base of the small finger. Wound exploration revealed a partial tear of the flexor digitorum profundus tendon that was debrided.

## Management

- Vigorous irrigation
- Hot water
- Explore/debride wound
- Soft tissue x-rays


## Management

- Pack open
- Close loosely
- Tetanus
- Prophylactic antibiotics
- Recheck in 24 to 48h



### Needlefish

- 7 species along Atlantic seaboard
- Long and slender 0.5m – 1.5m
- Blue-green on top; silver on bottom
- Surface carnivore predators
- High risk of infection

An illustration of a needlefish swimming in the water. The fish is long and slender, with a pointed snout and a small tail. The background is a blue sky with a sun and palm trees.

### Needlefish

- Resemble garfish
- Capable of great speed
- Attracted to light
- Jump out of water

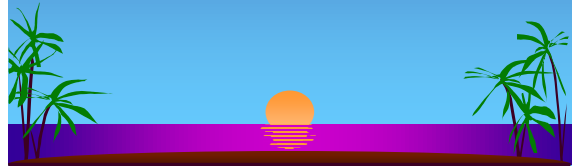
An illustration of a needlefish swimming in the water. The fish is long and slender, with a pointed snout and a small tail. The background is a blue sky with a sun and palm trees.





## Needlefish

- Penetrating injury
- Usually extremities
- Abdomen, ocular, cervical, cranial and articular injuries documented

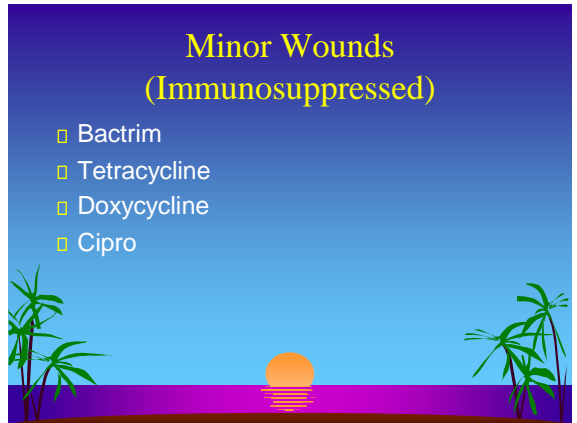


## Antibiotic Selection



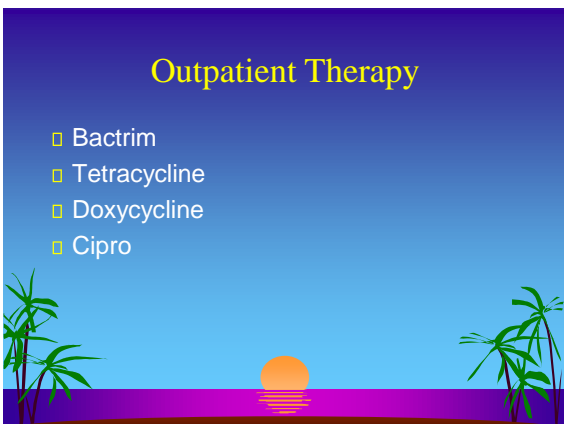
## Minor Wounds (Immunosuppressed)

- Bactrim
- Tetracycline
- Doxycycline
- Cipro



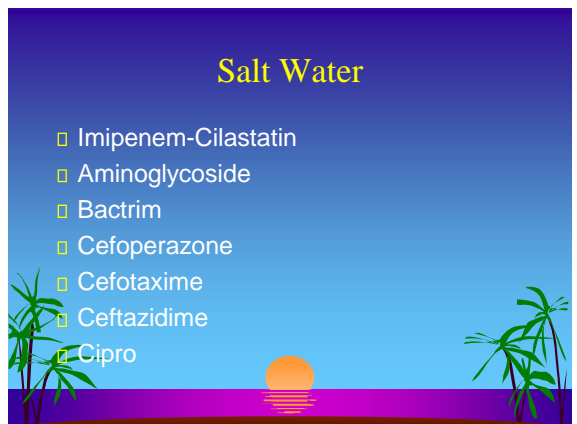
## Outpatient Therapy

- Bactrim
- Tetracycline
- Doxycycline
- Cipro



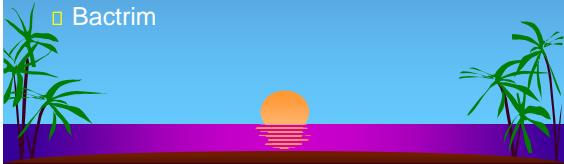
## Salt Water

- Imipenem-Cilastatin
- Aminoglycoside
- Bactrim
- Cefoperazone
- Cefotaxime
- Ceftazidime
- Cipro



## Fresh Water

- Imipenem – Cilastatin
- Ceftazidime
- Cipro
- Gentamycin
- Bactrim



## Toxic Marine Ingestions

- Increase in consumption
- Increase in fresh and exotic fish
- Increase in recognition

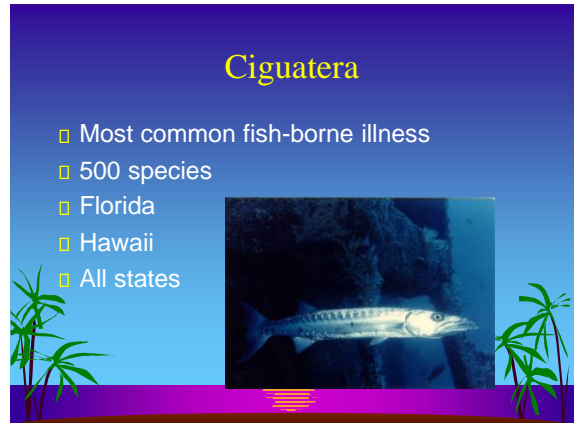


Eat Fish – Live Longer  
Eat Oysters – Love Longer  
Eat Clams – Last Longer



## Ciguatera

- Most common fish-borne illness
- 500 species
- Florida
- Hawaii
- All states



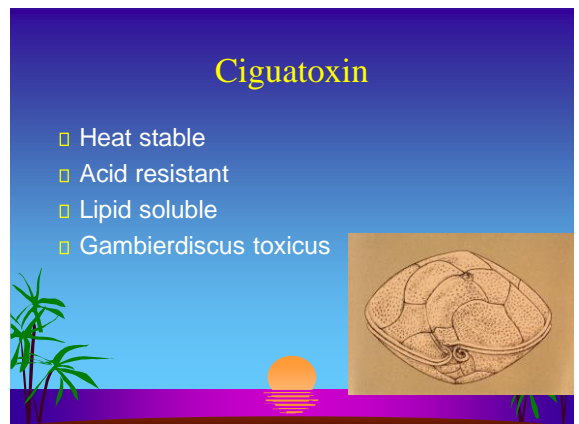
## Carnivorous Reef Fish

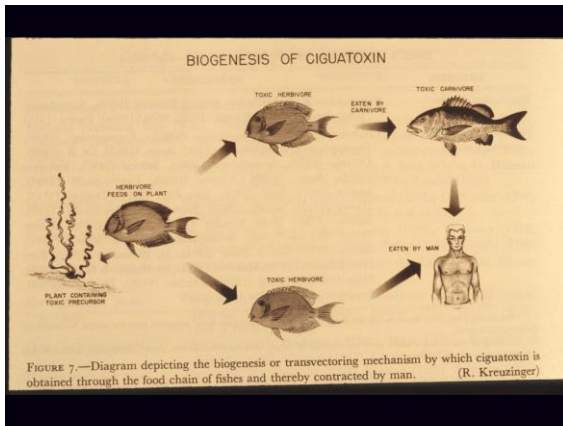
- Barracuda
- Grouper
- Jackfish
- Amberjack
- Snapper
- Sea Bass



## Ciguatoxin

- Heat stable
- Acid resistant
- Lipid soluble
- Gambierdiscus toxicus





## Ciguatoxin

- ❑ Head
- ❑ Internal organs
- ❑ No effect on taste
- ❑ No effect on smell
- ❑ No effect on texture

## Not Inactivated By:

- ❑ Cooking
- ❑ Freezing
- ❑ Smoking
- ❑ Drying
- ❑ Salting

## Presentation

- ❑ Individual susceptibility
- ❑ Amount of toxin
- ❑ Previous sensitization

## Presentation

- ❑ Onset within 6 hours
- ❑ Nausea/vomiting
- ❑ Diarrhea
- ❑ Abdominal cramps
- ❑ Resolves in 24 to 48 hours

## Neurologic Symptoms

- ❑ Sensory disturbances
- ❑ Hot-cold reversal
- ❑ Sensation of loose teeth
- ❑ Parasthesias
- ❑ Vertigo
- ❑ Blurred vision
- ❑ Ataxia



## Presentation

- Hypotension
- Arrhythmias
- AV block
- Bradycardia
- Shock
- Respiratory failure

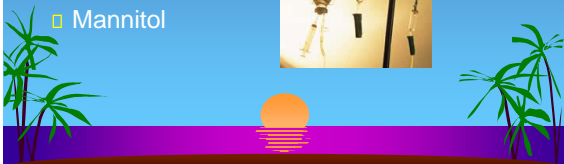


## Clinical Diagnosis



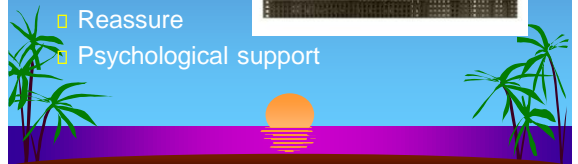
## Management

- Supportive
- Symptomatic
- IVF
- Atropine
- Mannitol



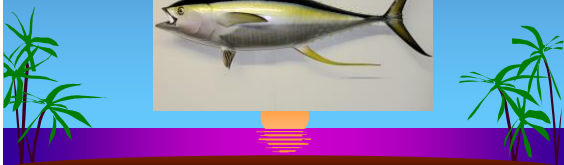
## Management

- Amitriptyline
- Tocainide
- Avoid reef fish
- Avoid ETOH
- Reassure
- Psychological support



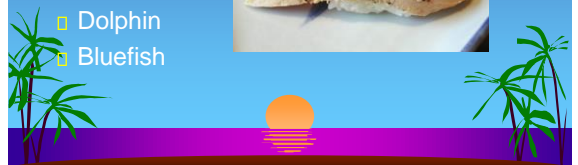
## Scombroid

- Dark-meated fish
- Improperly handled



## Scombroid

- Tuna
- Albacore
- Mackerel
- Bonito
- Dolphin
- Bluefish



## Scombroid Poisoning

- ❑ Improper refrigeration
- ❑ Bacterial proliferation
- ❑ Degradation of histadine
- ❑ Histamine
- ❑ Saurine

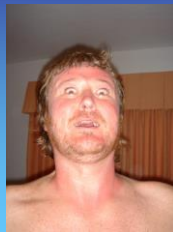


## Presentation

- ❑ Onset 30 min to hours
- ❑ Facial flushing
- ❑ Diaphoresis
- ❑ Burning sensation
- ❑ Nausea
- ❑ Diarrhea

## Presentation

- ❑ Abdominal cramps
- ❑ Palpitations
- ❑ Headache
- ❑ Sunburn-like rash
- ❑ Bronchospasm
- ❑ SVT
- ❑ Hypotension



## Role of Histamine

- ❑ Elevated urine histamine
- ❑ Elevated urine N-methylhistamine



## Clinical Diagnosis



## Management

- ❑ Gastric emptying
- ❑ Activated charcoal
- ❑ Benadryl
- ❑ Cimetidine
- ❑ Albuterol HHN
- ❑ Epinephrine
- ❑ Steroids

