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American Samoa
FISH COLORING BOOK



Grade 6 - 8

This fish coloring booklet is designed for middle school students in grades 6-8. The booklet provides opportunities for students to develop understanding and appreciation for the importance of a healthy fish population inhabiting our reef. Students will learn to describe different fins' functions, learn about different external anatomy of a fish, and, most importantly, understand how and why fish play such an important role in the Samoan culture.

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Reviewed/Edited by CRAG staff

Illustrated by Trevor T. Kaitu'u – Cover page and fishes



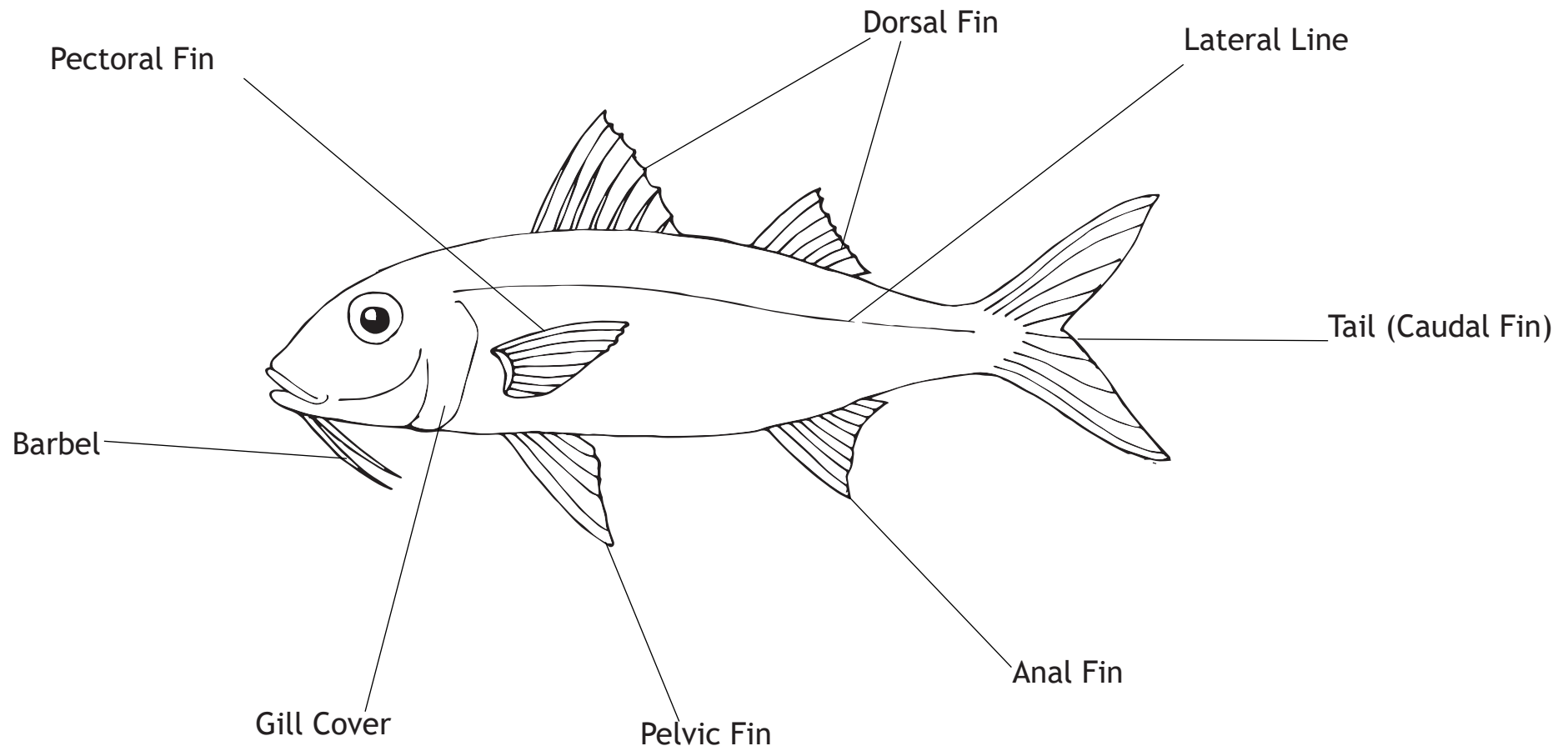
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FUN FACTS: Did you know?

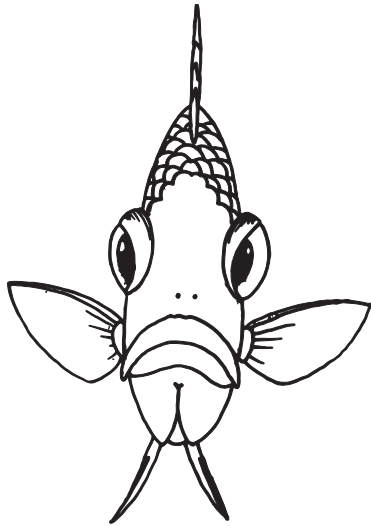
- Fish can be roughly defined as cold-blooded creatures that have backbones, live in water, and have gills.
- Fish have been on the earth for more than 450 million years.
- There are over 25,000 fish species in the world, and over ~15,000 are still unidentified.
- More species of fish exist in the world than all the species of amphibians, reptiles, birds, and mammals combined!
- Fish species are grouped into 445 families; these families contain species that are genetically similar.
- The largest fish is the whale shark (fifty feet long); the smallest fish is the Philippine goby (< 1/3 inch).
- Fish are found in lakes, streams, oceans, and estuaries.
- Tropical coral reefs contain the most colorful & diverse fish.
- American Samoa has more than ~700 marine species.
- How can you tell them all apart??? This book will help you! Check out the next page for more.

FISH EXTERNAL ANATOMY



FISH FIN TYPES

1. **Dorsal fin** - Gives stability and stops from rolling over.
2. **Caudal (Tail) fin** - Propels through the water, speeds up and turn the fish.
3. **Lateral line** - System of sensory nerves (touch sense).
4. **Pectoral fins** - Helps to steer up, down, and backwards.
5. **Pelvic fins** - Used as brakes and to move up and down.
6. **Anal fin** – Gives the balance to keep on a steady course.
7. **Barbel** - Contains chemosensory organs, which are used to probe the sand or into holes in the reefs for food (shellfish, worms, or small fish).
8. **Gill Plate over (Operculum)** - Gills are feathery structures that allow the fish to breathe under water. Water passes through the gills where oxygen is absorbed and CO₂ is released. Gills also excrete ammonia (fish urine).



Fish Adaptations

With so many fish living in habitats such as oceans, streams, and estuaries, they have developed specific adaptations to suit their own particular environment.

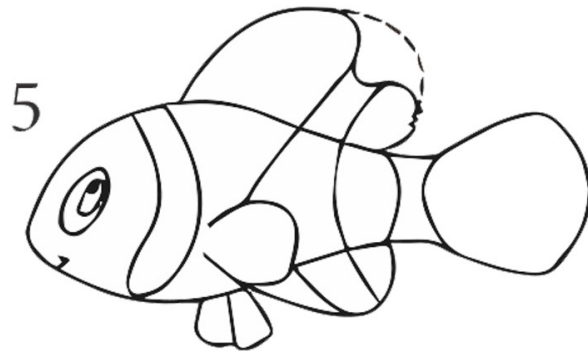
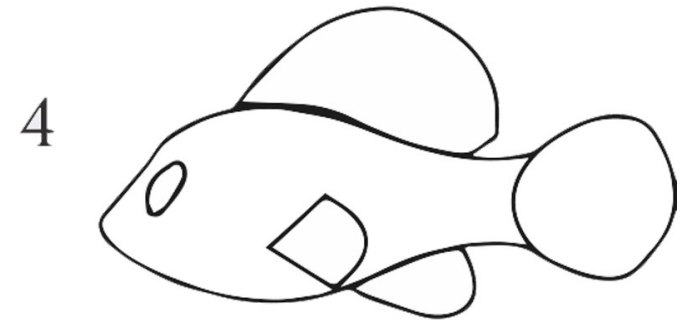
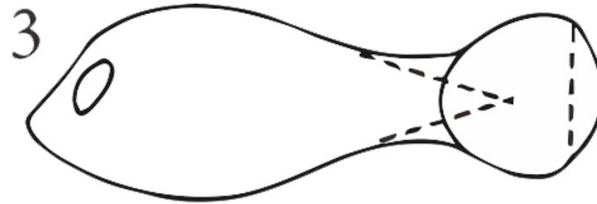
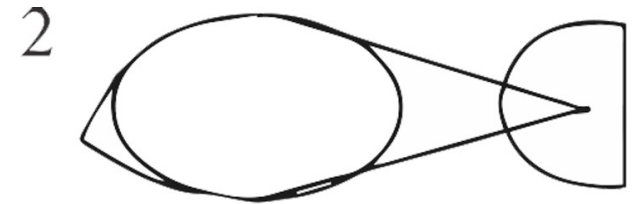
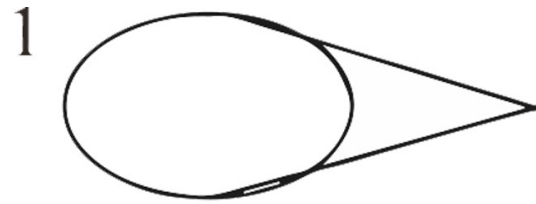
Developing certain adaptations over time enables fish to live successfully within their habitat and carry out necessary functions such as eating and swimming.

HOW DO YOU IDENTIFY THEM?

There are several things you need to look out for:

1. Fins - location, number and shape
2. Body shape and proportions
3. How it swims
4. Marks and camouflage

ACTIVITY 1:
HOW TO A DRAW FISH.
There are six simple steps on
how to draw a fish.

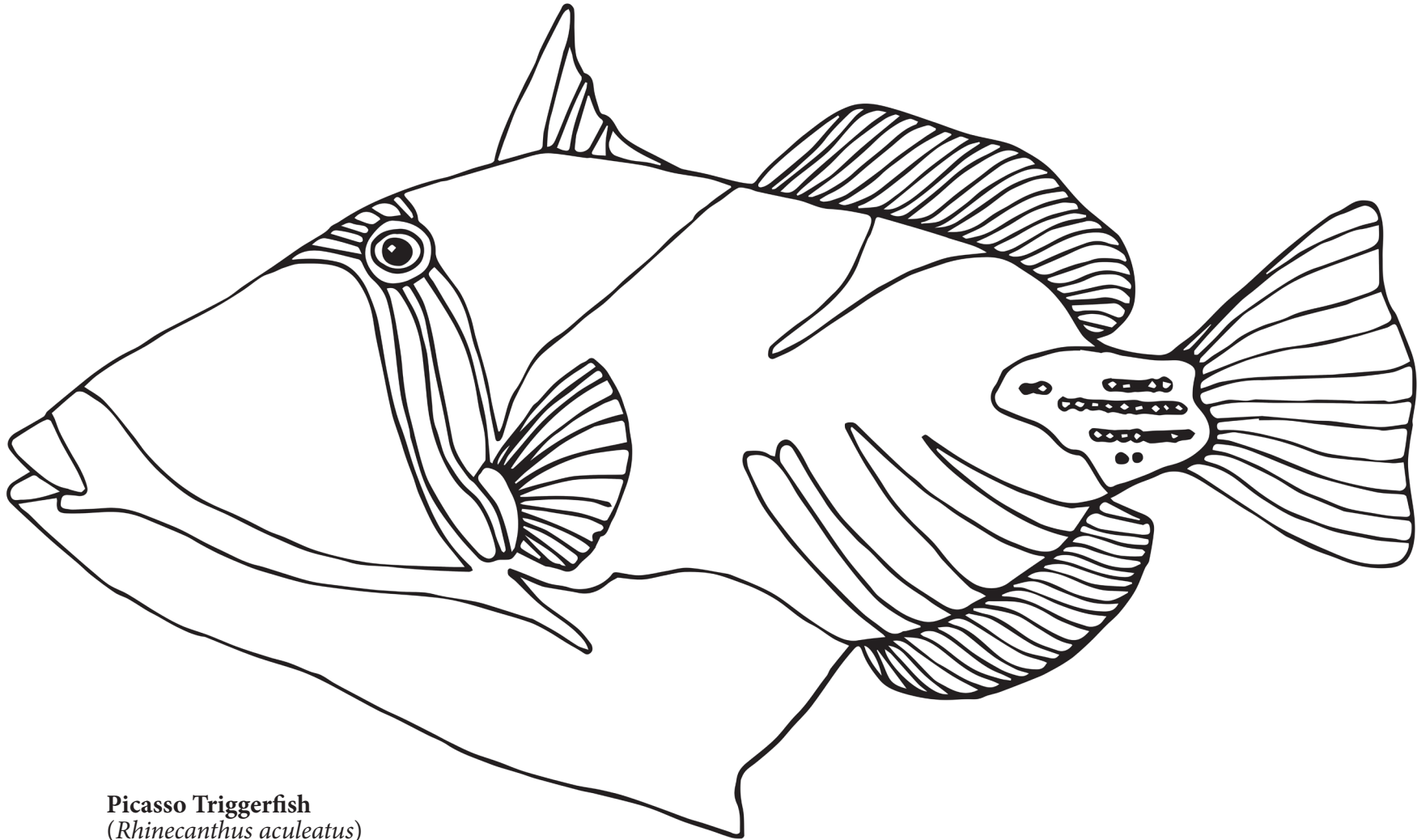


ACTIVITY 2:

Draw your own fish from imagination USING THE BASIC FORMS ON PAGE 5

ACTIVITY 3:

Learn about fish in American Samoa. Color the fish and then read all about them!

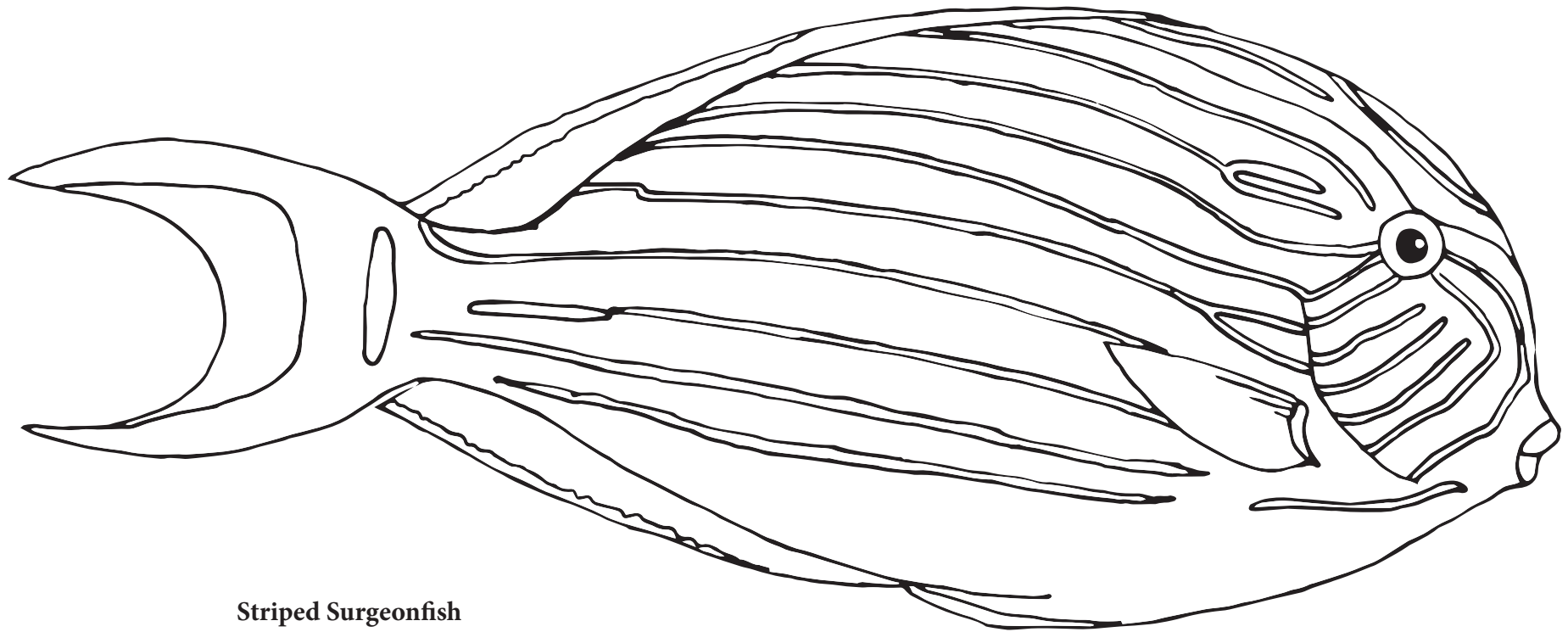


Picasso Triggerfish
(Rhinecanthus aculeatus)

There are about 15 species of often brightly colored Sumu fish of the Triggerfish family (Balistidae) in American Samoa. Sumu are often marked with a bright blue band between the eyes and are mostly found in relatively shallow, coastal habitats, typically coral reefs. They feed on algae, detritus, mollusks, crustaceans, worms, sea urchins and tunicates, and can grow up to 11.8 inches. They sleep on their side and make a whirring noise when alarmed.

Give your Sumu a bright blue band between the eyes!

Alogo



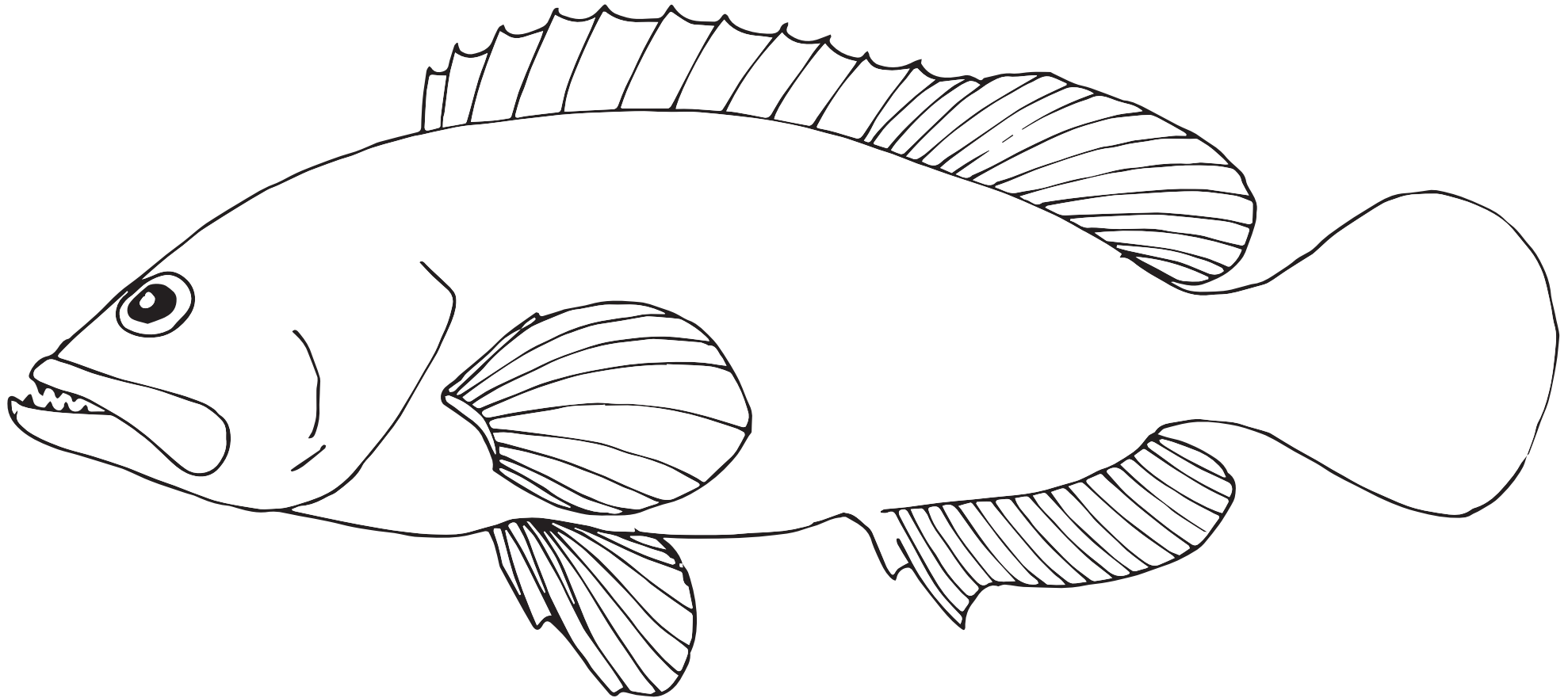
Striped Surgeonfish
(*Acanthurus lineatus*)

Alogo are one of the many species of Surgeonfishes (Acanthuridae) in American Samoa, and it can grow up to 15 inches in length. They are recognized by their gold undercolor with numerous black edge blue stripes and bluish belly, and also have yellow stripes and a spine on its tail.

Alogo are associated with wave-exposed reefs at around 10 feet deep. They feed on algae and are very territorial, often defending their feeding grounds from other fish.

Color the stripes of the Striped Surgeonfish blue and yellow!

Gatala-aloalo; Gatala pulepule

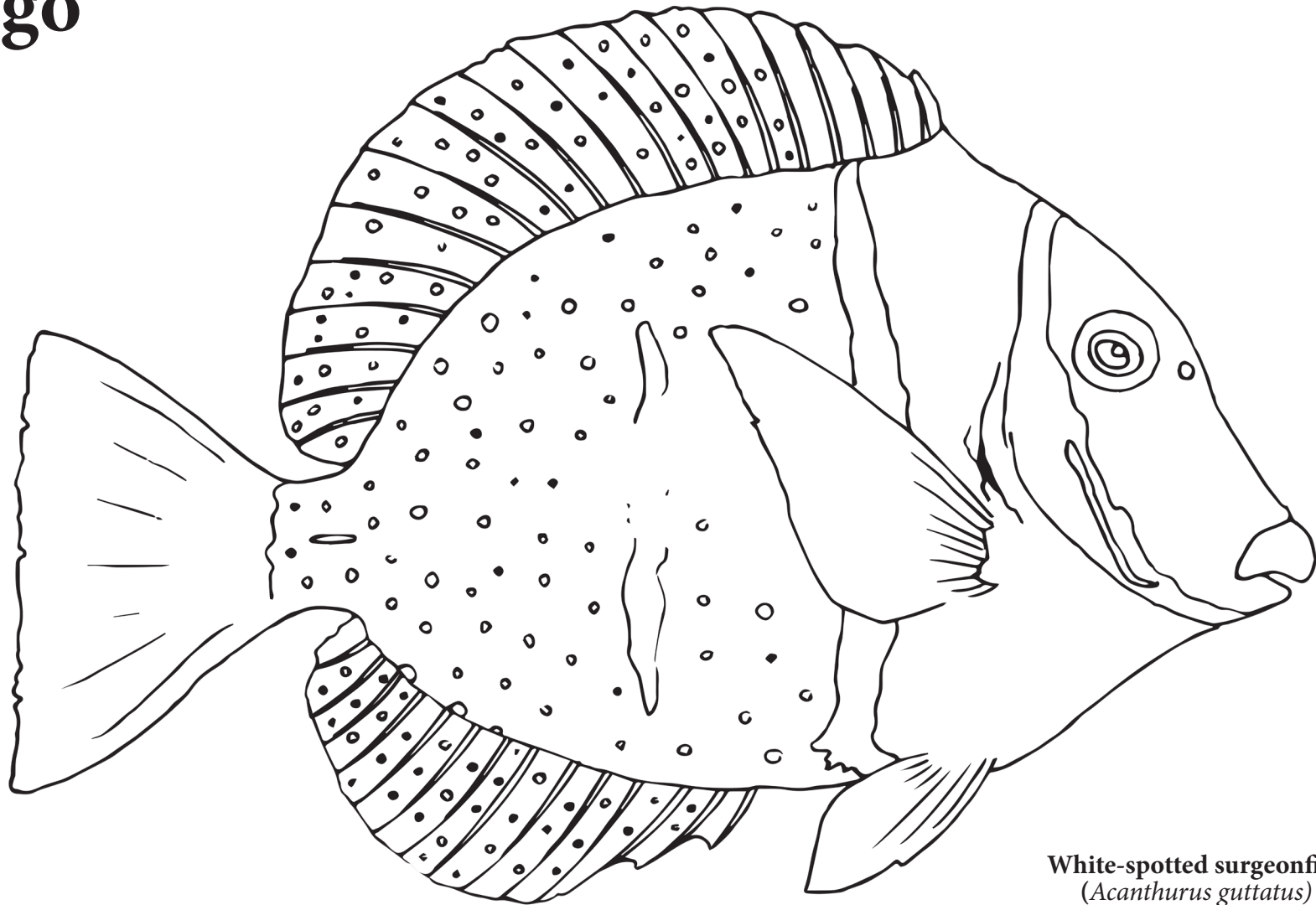


Honeycomb grouper
(*Epinephelus merra*)

Honeycomb grouper normally have a white undercolor with polygonal spots in varying shades of brown; no distinctive markings. They are solitary and are found in coastal lagoons and sheltered outer reefs in 3.3ft - 165ft . There are approximately 160 species of groupers. The species vary greatly but most have a wide body with a large head and mouth. Many species are well camouflaged in spots of yellow, green and brown.

Color your fish and show the honeycomb pattern on the fish.

Maogo



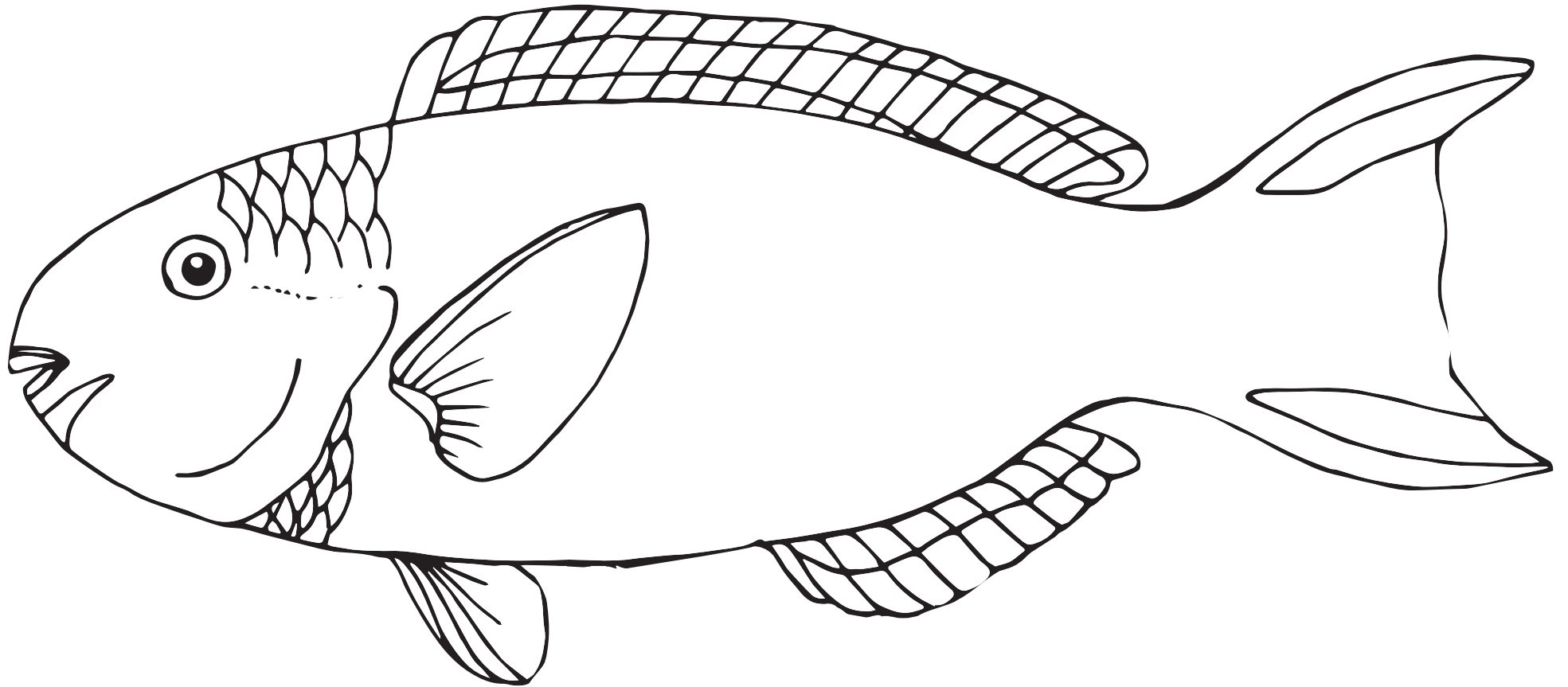
White-spotted surgeonfish
(*Acanthurus guttatus*)

General name for surgeonfish (*Acanthurus* species) less than 15cm are Pone, and larger individuals are called Palagi.

White-spotted surgeonfish are related to the Alogo and are commonly found in shallow waters on reefs. They feature a grey/black basic color, with yellow pelvic fin and tail. They also have white spots and are laterally compressed, meaning they are flattened from side to side. The fish grows to a maximum length of 10 inches. They feed on filamentous algae and calcareous algae.

Color the fins and tail of the surgeonfish yellow, and make sure you leave the spots white!

Laea



Dark-Capped Parrotfish (*Scarus oviceps*)

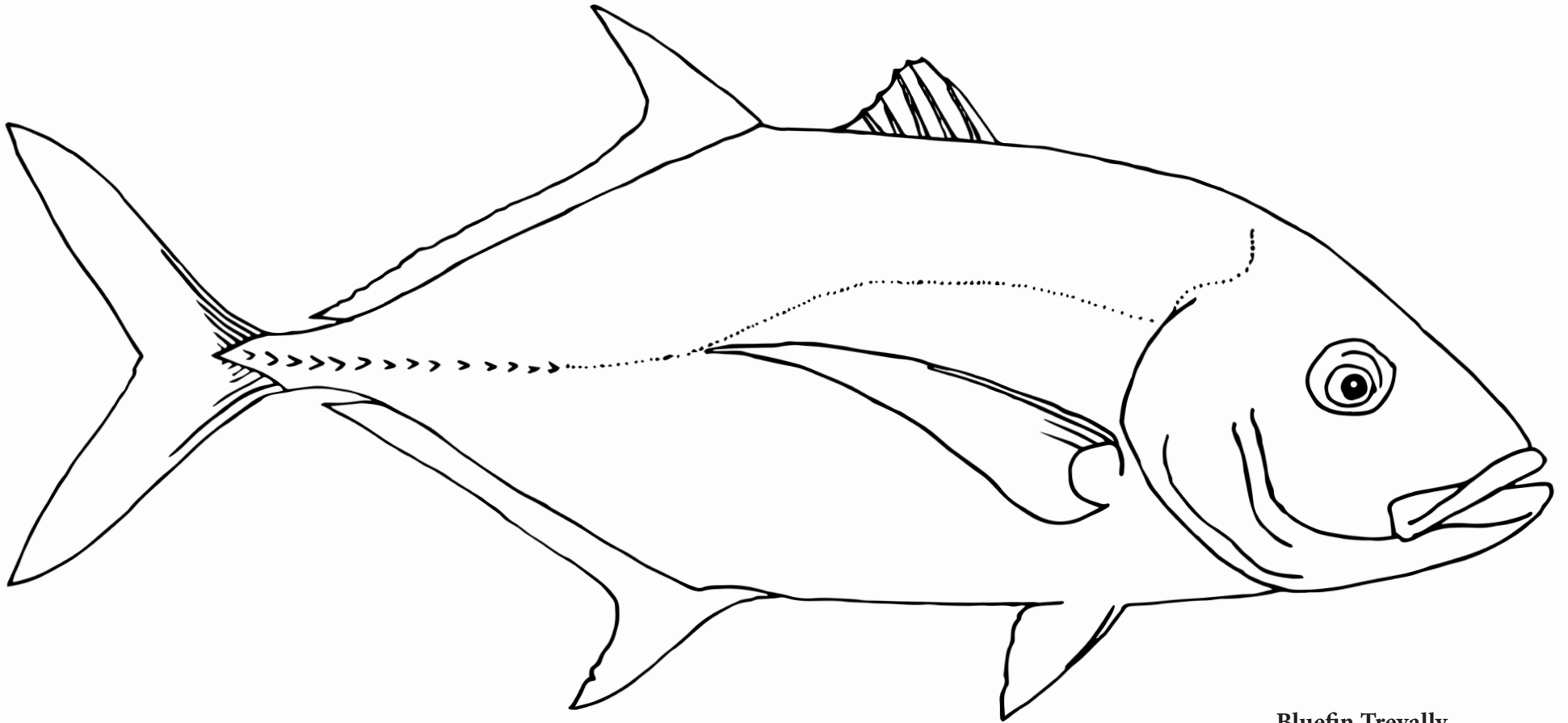
Parrotfish are commonly found in coral reefs, along rocky coasts, and in seagrass beds from relatively shallow to deep water.

Parrotfish play a significant role in preventing algal overgrowth of the reef structure by scraping algae off the coral and producing sand when they poop out coral and algal skeleton.

Parrotfishes are named for their dentition, or arrangement of teeth, which looks almost like a beak of a parrot. These teeth are suitable to bite or rasp algae from coral and other rocky substrates. Parrotfish sizes vary within the family, with the majority of species reaching 12 – 20 inches in length. However, a few species, such as green humphead parrotfish, can reach up to 4 feet in length. Certain species of parrot fish envelop themselves when they sleep at night in a transparent cocoon made of mucous secreted from an organ on their head, presumably helping to hide its scent from potential predators. Most parrotfish are herbivores, but some species eat a wide variety of very tiny reef organisms. Some species, such as the green humphead parrotfish, include coral (polyps) in their diets.

Color your parrotfish any color you want and do not forget to add on more scales!

Malauli-apamoana

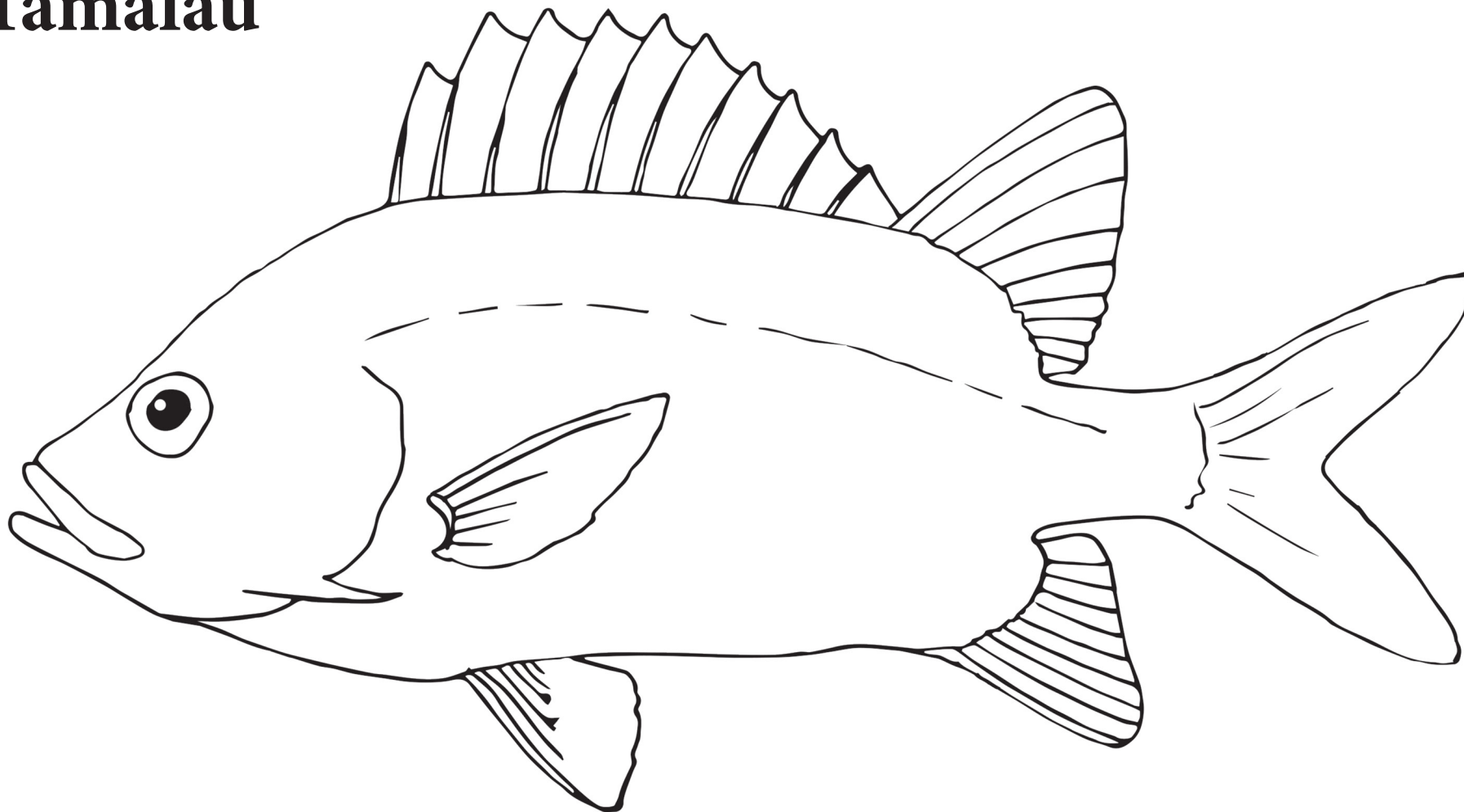


Bluefin Trevally
(*Caranx melampygus*)

Bluefin trevally can grow up to 40 inches, and feature silvery iridescent blue to green colors with dense spotting on the upper two-thirds of body, and blue to bluish fins. These fish can either be solitary or form schools. They generally have a deep forked tail, small teeth, and usually swallow small fish whole! Most bluefin trevally live in a wide range of offshore and inshore habitats including coral reefs.

Color your Bluefin Trevally blue to green!

Tamalau

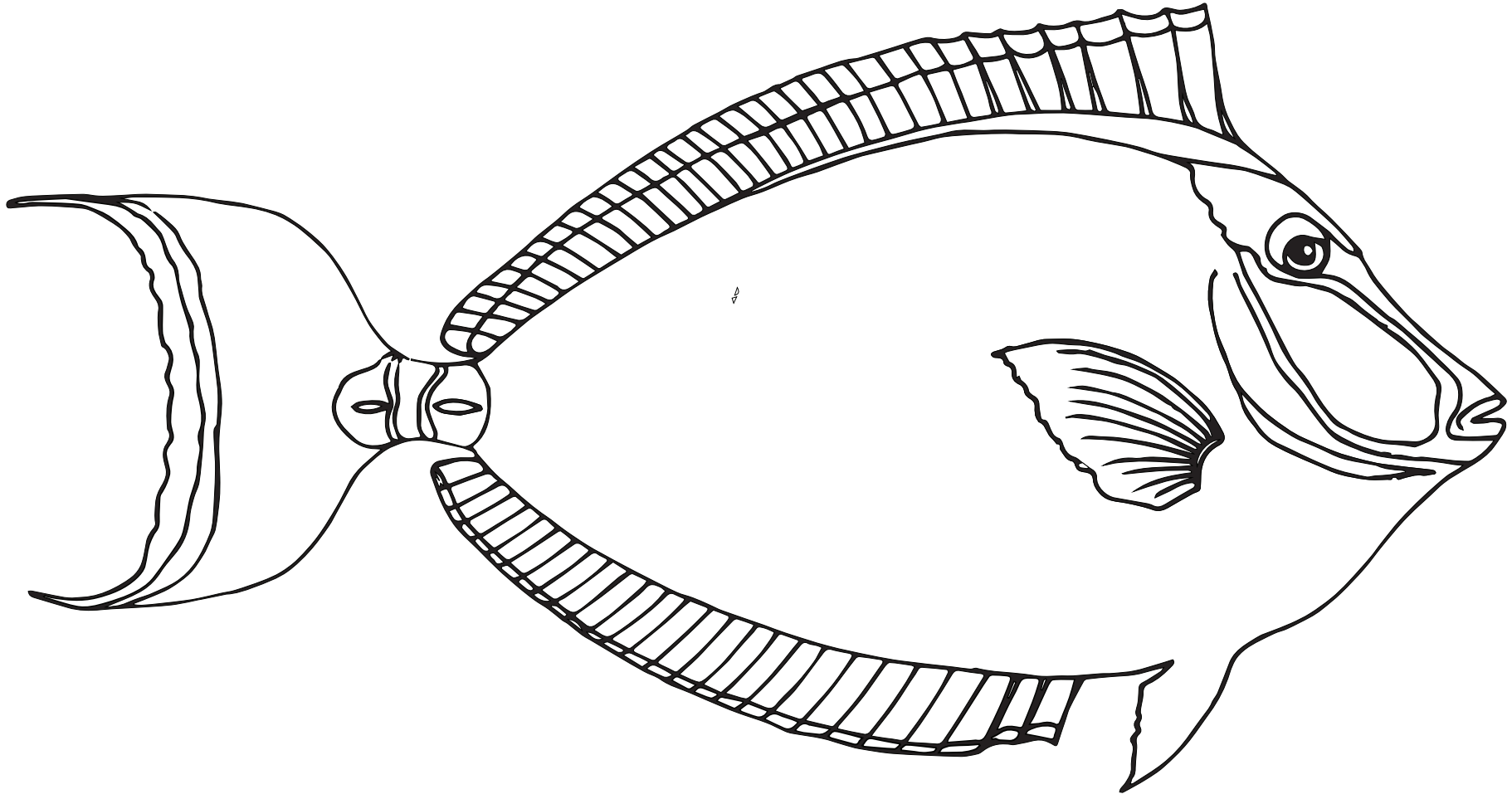


Sabre Squirrelfish
(*Sargocentron spiniferum*)

Sabre squirrelfish can grow up to 18 inches. These fish are large and red with vertical silvery streaks on each scale. Their anal and ventral fins are often yellowish. They also have a prominent cheek spine. They are solitary or live in pairs, and are often found inside caves, ledges, lagoons, and seaward reefs to down 400 feet.

Do you see the prominent cheek spine?

Ume



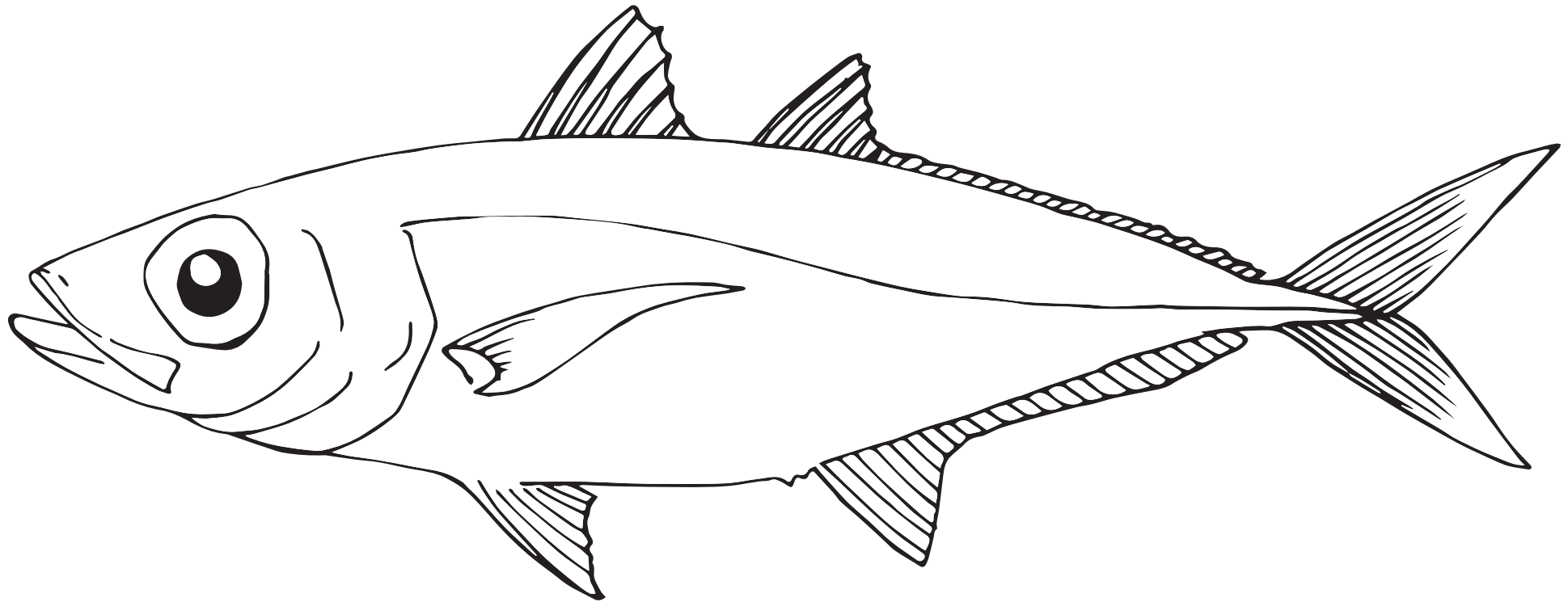
Orangespine Unicornfish (*Naso lituratus*)

Naso species are generally called Ume. Individuals are called Umelei (>6 in) or Ili'ilia (<6 in).

The Ume is a species of Unicornfish that are also in the Surgeonfish family (Acanthuridae), and they usually swim in a small group or on their own. They can grow up to 12 inches in length and mainly feed on leafy brown algae. They are identified by the brownish gray, yellowish neck and orange tail spines and anal fin. They also have a yellow-edged black area from the mouth to eye, and a broad black band on the dorsal fin.

Give your Ume fish a yellow edge around a black area from the mouth to the eye!

Atule

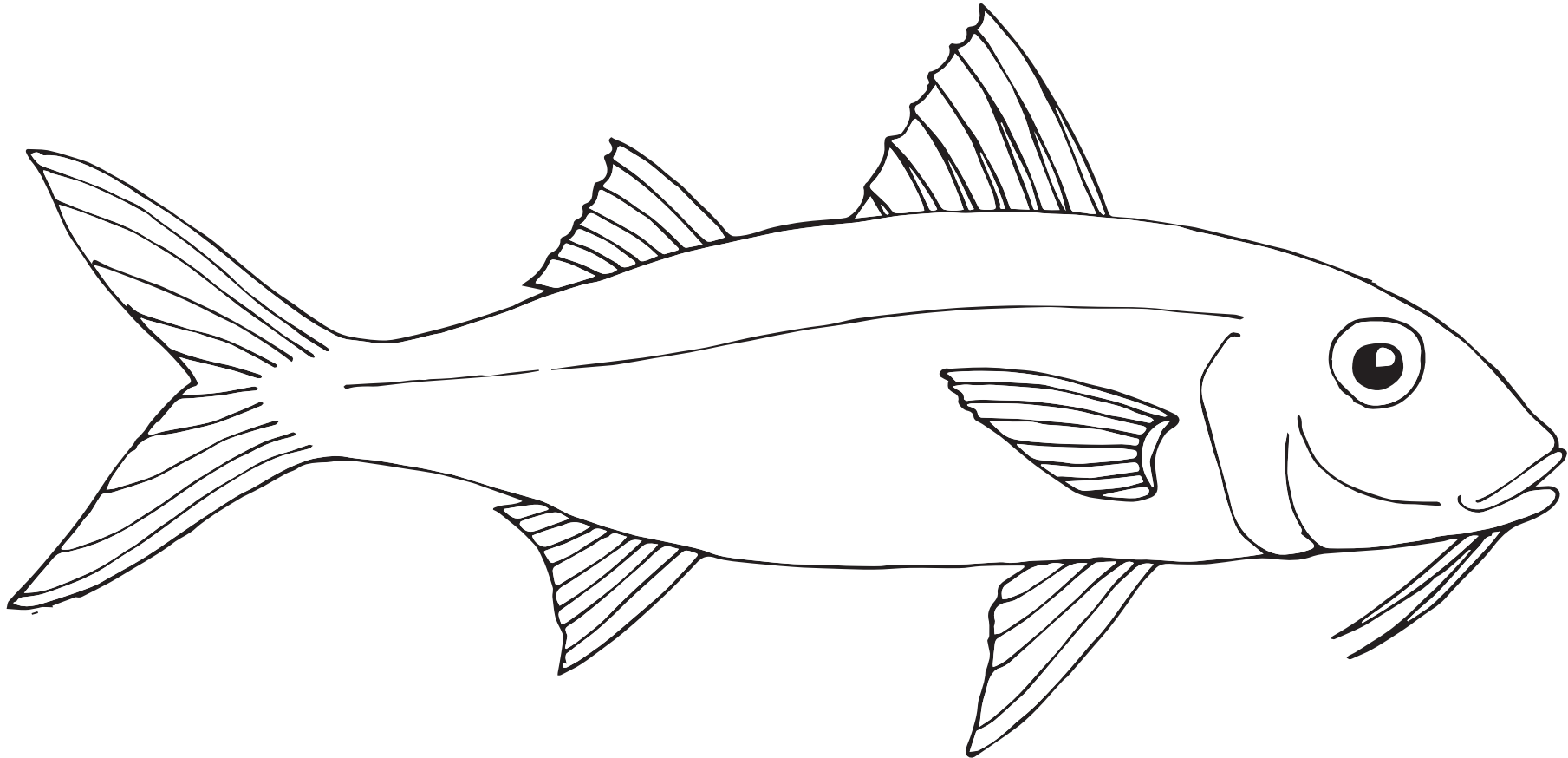


Bigeye scad (*Selar crumenophtalmus*)

Fishing for atule is a good example of how seasonality, time of day, and tides come together. The atule appear in large schools in April/ May and October and they were often caught by using a communal effort (lauloa) of driving the fish towards a trap with branches and coconut fronds. Thousands of atule could be caught with this method. They were distributed equally to all the village families who participated in the fishing, and when there was a large catch, they were given as gifts to family and friends in other villages. Gifts of fish are part of the reciprocal relations and constant circulation of food and gifts that maintains Samoan social structure to this day.

Color a yellow stripe on your atule!

I'asina



Yellowfin goatfish
(*Mulloidichthys flavolineatus*)

The yellowfin goatfish belongs to the Goatfish (or Mullidae) family and they can grow up to 17 inches and swim in schools. They normally look gray to olive in color on their back and sides and have whitish bellies. They have a yellow mid-lateral stripe from eye to tail, and some yellow striping on the cheek and along the abdomen. The small juvenile fish are called I'asina and both men and women in American Samoa use the 'enu (fish basket) to catch them when they are schooling in the shallow waters during specific times of the year.

Give your I'asina yellow stripes on the cheek and from the eye to the tail!

Activity: FISH IDENTIFICATION - If you are helping your mother preparing fish for dinner try and identify the fish before you put it in the umu. Below are some guidelines to help you identify the fish.

1. Name of fish: Common names/Samoan names _____, _____

Description (including the shape, color and fins):

2. Measurement of your fish: _____

3. What they feed on:

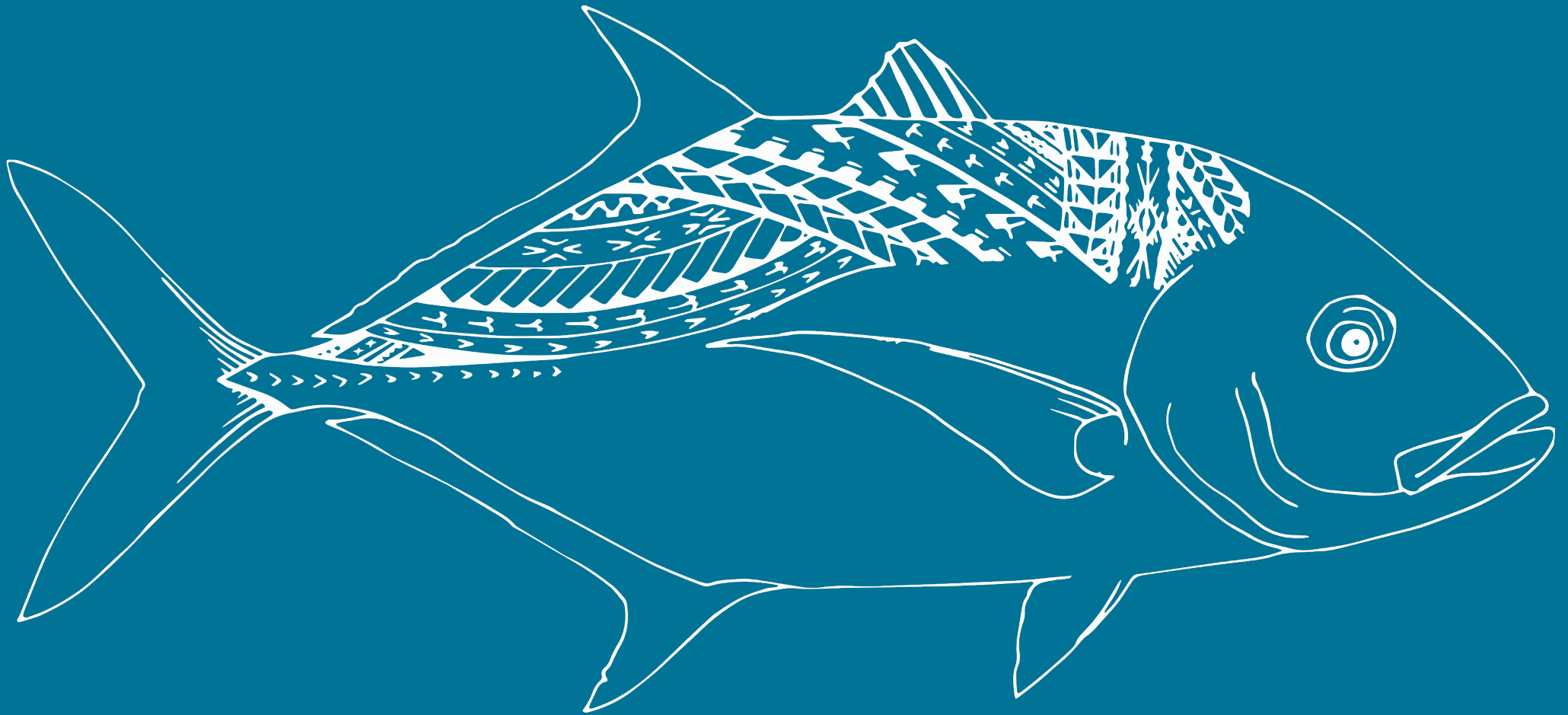
4. Draw your fish:

What YOU can do to help PROTECT OUR FISH

- Be a responsible fisher.
- Do not disturb fish when in the water by chasing or getting too close.
- Only catch enough fish for you and your family.
- Be aware of fisheries regulations which help to ensure your coral reefs are healthy for future generations to enjoy.
- Help to protect Humphead Wrasse, Bumphead parrotfish and Giant grouper.
- For more information visit the DMWR office or the website www.asbar.org

Resources:

- <http://www.deviantart.com/tag/drawinglessons>
- <http://diana-huang.deviantart.com/art/How-to-Draw-Nemo-98643792>
- <http://www.spc.int/coastfish/en/publications/information-sheets/kit-for-communities>
- American Samoa underwater identification guide, Secretariat of the Pacific Community and Department of marine and Wildlife Resources, 2004
- Gerald A, Roger S, Paul H, Ned D. (2003). *Reef Fish identification*, Tropical Pacific. Florida: New World Publication, p 55, 152, 159, 180, 244
- Anne Glick, Laura Jerome (2005). *Fish Biology*, Hooked On Fish Not On Drugs. USA: Schaffner Printing Inc, p 10



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