



# PAPER PLATE FISHES LESSON PLAN

*Moorea Coral Reef Long Term Ecological Research Program  
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## Paper Plate Fishes



### Abstract

This activity is a fun, basic craft, but can be adapted to incorporate structure and function lessons in a classroom setting. Students will build their own fish from a paper plate, decorate it, and learn about the function of each of their fish's fins in the process.

### Level

Elementary school

### Time Required

30 minutes

### California Science Education Standards

#### *Kindergarten*

2c. Students know how to identify major structures of common plants and animals (e.g., stems, leaves, roots, arms, wings, legs).

#### *Grade Three*

3a. Students know plants and animals have structures that serve different functions in growth, survival, and reproduction.

### Materials

Example fishes (*see end of lesson*)

Paper plates (one for each student)

Fin pages (one for each student) (*see end of lesson*)

Scissors

Glue, glue sticks, staplers or tape to attach fins

Crayons

*Optional:* Glitter, glue and plates/pans to contain glitter

### Advance Preparation

\* Make copies of fin page for each student (at end of lesson)

\* Collect materials and organize for students

### Teacher Background

Each of a fish's fins has a unique role. You can incorporate structure and function lessons into this activity by discussing the role of each fin type as your students assemble their paper plate fishes.

#### Common Fin Functions

Caudal Fin (tail): For forward propulsion and steering

Dorsal Fin (top) and Anal Fins (bottom, back): Prevent rolling side to side, may also be used for forward propulsion in fishes like triggerfish

Pelvic Fins (bottom, front): Prevent pitching front to back, and serve as brakes

Pectoral Fins (side): Sculling action allows precise movements from side to side or forwards and backwards, may also be used for propulsion in fishes like parrotfish and wrasses.

## Instructional Procedure

To make a fish, students will need to

- Cut out a wedge as a mouth, and attach the wedge at the opposite end as a tail.
- Color their fish and fins
- Cut out and attach their fish's fins to the body

As students are assembling their fish, you can discuss the function of each fin type

- Using pictures of real fish from the end of this lesson as examples, ask your students to describe what they already know about the function of a fish's fins.
- Point out that the role of each fin depends on the species of fish.
- Discuss the function of each fin as your students attach them;
  - The tail, or caudal fin, is the main driver in thrusting forward fast swimming fishes, such as tunas, barracudas and many sharks.
    - For other fishes that depend on maneuverability around rocks and corals (like parrotfishes, wrasses, triggerfishes) the pectoral fins (for parrotfishes and wrasses) or even the dorsal and anal fins (for triggerfishes) provide the primary mode of propulsion.
    - Ask students how they think an eel might swim, since it does not have pectoral fins, pelvic fins or a tail.
      - True eels have secondarily lost these fins through evolution.
      - Like snakes, eels move by passing waves down the length of their body.
    - Have students relate these movements to how they swim.
      - Kicking feet are like a tail.
      - A breaststroke motion with the arms (no legs) is like sculling with pectoral fins.
      - Swimming using a butterfly kick without using arms (undulating the whole body) is roughly analogous to eel-like swimming.
  - The pectoral fins (side) also move in a sculling motion to control precise movements from side to side or forwards and backwards.
  - The dorsal fin (top) and anal fins (bottom, back) also prevent rolling from side to side.
  - The pelvic fins (bottom, front) prevent pitching from front to back, and act as brakes.
- Using their completed fish, have your students demonstrate in the air what would happen to their fish if they didn't have a certain fin;
  - For example, if they were missing their tail, most fish would hardly move forward, but others could. Show how.
  - Missing dorsal or anal fins would make them tip over to the side if a current came by.
  - Missing pelvic fins would make it hard to brake, or would make them tip forward or backward if a current came by.
  - Missing pectoral fins would make it difficult for their fish to turn

## Going Further

If internet is available, visit the Moorea Coral Reef LTER Marine Life Encyclopedia and watch videos of fishes swimming to see how the various fins are used. For example:

- the blacktip reef shark swims using its caudal fin  
<http://mcr.lternet.edu/education/encyclopedia/speciescard.php?refID=2&CreatureID=3>
- The redtooth triggerfish swims using its dorsal and anal fins  
<http://mcr.lternet.edu/education/encyclopedia/speciescard.php?refID=2&CreatureID=2>
- The ornate butterflyfish and Moorish idol swim using their pectoral fins  
<http://mcr.lternet.edu/education/encyclopedia/speciescard.php?refID=2&CreatureID=40>  
<http://mcr.lternet.edu/education/encyclopedia/speciescard.php?refID=2&CreatureID=17>
- Use the video of the whitemouth moray eel, which does not show it swimming, to prompt students to think about how it might swim  
<http://mcr.lternet.edu/education/encyclopedia/speciescard.php?refID=2&CreatureID=11>

# EXAMPLE MOOREA FISHES FOR COLORING



ORNATE BUTTERFLYFISH  
*Chaetodon ornatsoimus*



PICASSO TRIGGER  
*Rhinecanthus aculeatus*



BLACKSADDLED TOBY  
*Canthigaster valentini*



BLUESPINE UNICORNFISH  
*Naso unicornis*



SIXBAR WRASSE  
*Thalassoma hardwicke*



CONVICT SURGEONFISH  
*Acanthurus triostegus*



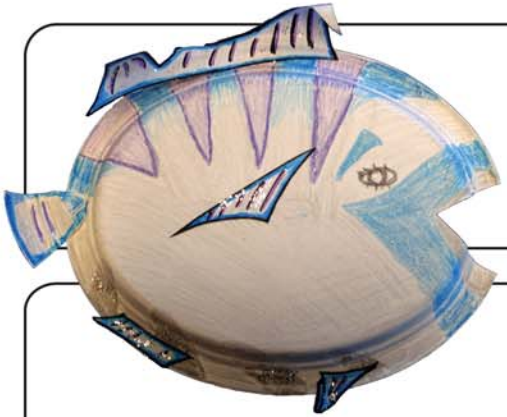
BULLETHEAD PARROTFISH  
*Chlorurus sordidus*



SPECKLED BUTTERFLY  
*Chaetodon citrinellus*

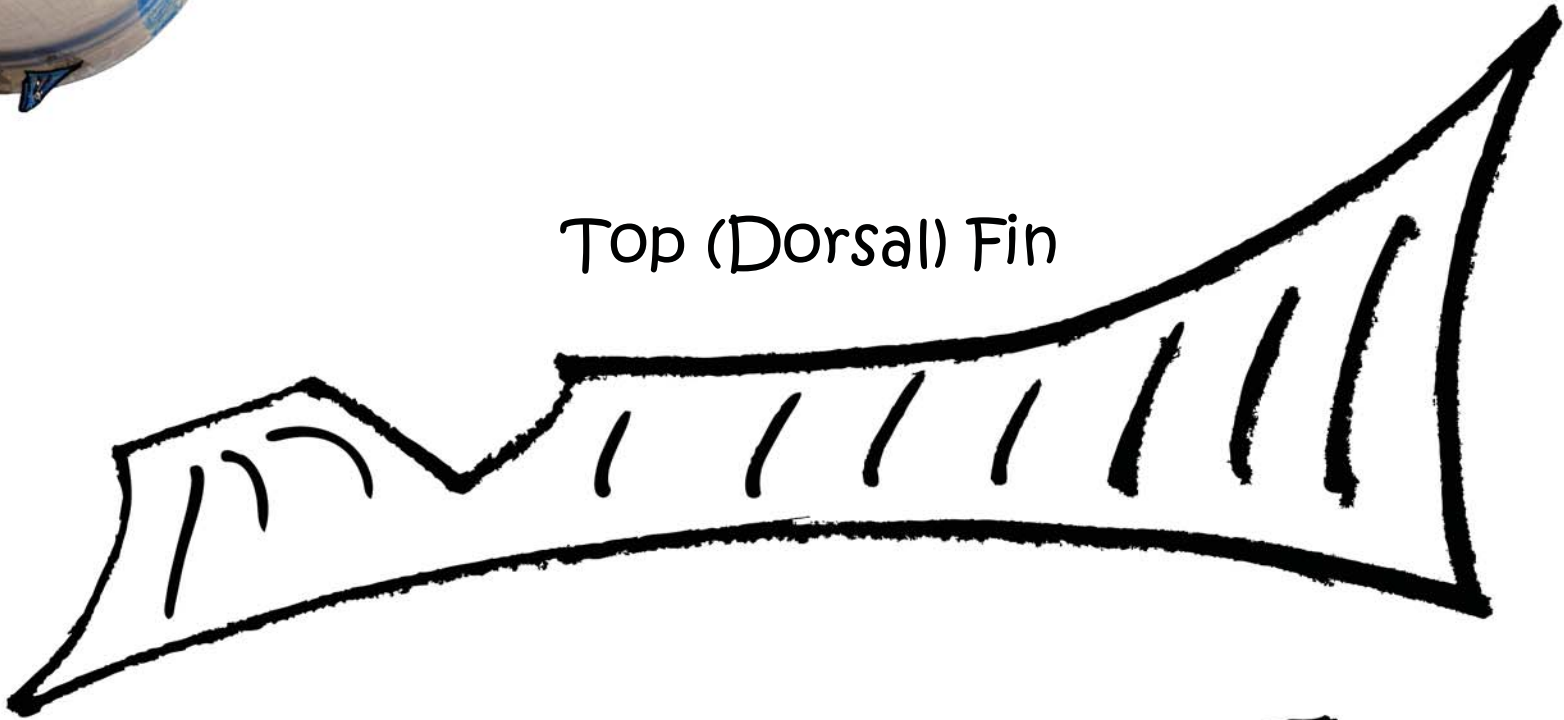


CHECKERBOARD WRASSE  
*Halichoeres hortulanus*

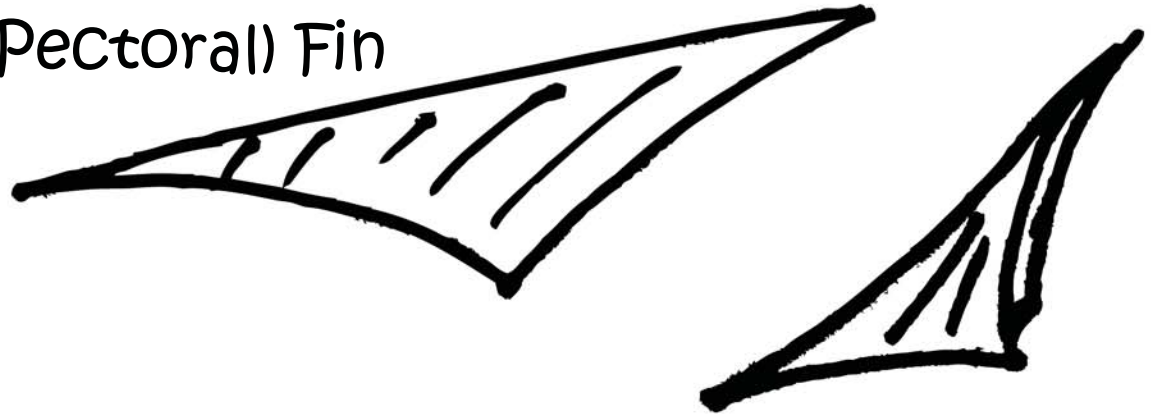


# Fins for an Oval Shaped Fish

Top (Dorsal) Fin



Front (Pectoral) Fin

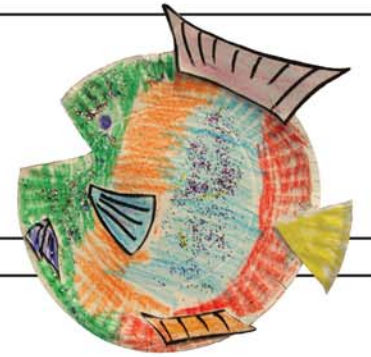
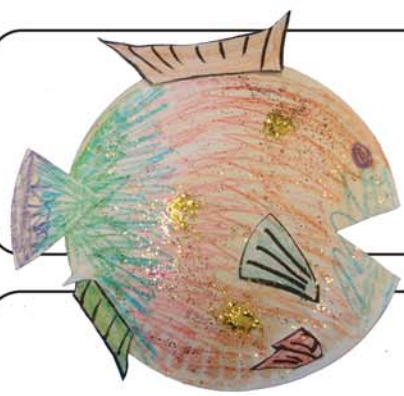


Bottom (Median) Fin

Middle (Pelvic) Fin



# Fins for a Round Fish



Top (Dorsal) Fin



Front (Pectoral) Fin



Bottom (Median) Fin



Middle (Pelvic) Fin

