

Color Theory of Fishing lures

Mixing Paints - Color Theory for Fishing Lures



For those of us who don't have a master's degree in art, the craft of mixing paints can be - to put it mildly - frustrating. We know what colors we want to create, but we have absolutely no idea how to make them! Luckily, there are few basic principles that we can follow to make the task a little easier.

What is Color Theory?

In a nutshell, color theory is the "science" behind mixing and using colors. Understanding color theory will help you create new colors and then use those colors in combinations that are appealing to fish (*and fishermen*).

But, before we dig into the details of color theory, it's important to understand that there is a difference between *combining* colors and *mixing* colors. When we talk about combining colors, we mean using multiple colors on a lure. When we talk about mixing colors, we mean the physical blending together of colors to create a new color.

Combining Colors

The foundation of color theory is the "color wheel" - many of you will remember this from your grade school science classes. The color wheel is a tool used to show the results of mixing together different colors.

The Color Wheel

The wheel consists of "primary" colors (P), "secondary" colors (S), and "intermediate" colors (I). The primary colors (red, blue, yellow) are the building blocks for all other colors (Figure 1). You cannot create a primary color by mixing other colors together, but you CAN create other colors by mixing the primary colors together. When you mix two primary colors together, you get a "secondary" color (Figure 2). The color that results from mixing two primary colors together is shown in the color wheel. For instance, orange is between red and yellow because that is the color you get when you mix red with yellow.

In addition to primary and secondary colors, there are also other colors known as "intermediate" colors (Figure 3). To create an intermediate color, you mix a primary color with a secondary color. For instance, to make pink, you mix orange and red.

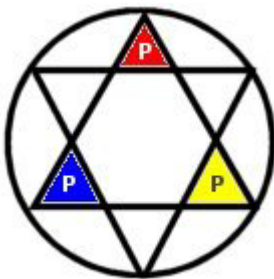


Figure 1

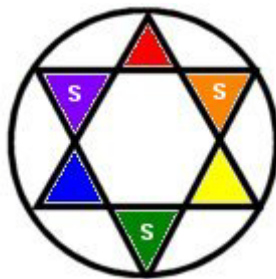


Figure 2



Figure 3

Neutral Colors

There are three neutral colors: white, black, and gray (note: brown is occasionally included as a neutral color). These neutral colors are created by mixing together equal parts of red, blue and yellow (the primary colors) and then lightening it as needed with white.



Tints, Shades, and Tones

"Tint" is a fancy way of saying "make the color lighter". "Shade" is a fancy way of saying "make the color darker". "Tone" is a fancy way of saying "make the color a little more subdued". You can create thousands of new colors by making a color lighter, darker, or more subdued. To tint a color, you add white to it. The more white you add to the color, the lighter the tint. To shade a color, you add black to it. The more black you add to the color, the darker the shade. To tone down a color, you add gray to it. The more gray you add, the more subdued the color becomes.



Color Schemes

Now that you understand how the colors on a color wheel work, you can use the color wheel to figure out which colors look good together. There are many ways to do this, and many different color scheme approaches.

Monochromatic Color Scheme

In this color scheme, all of the colors on the lure are made by tinting or shading a single color. Here is an example of a monochromatic color scheme on a lure (see image to the right). Notice that the entire lure is painted using versions of green. To create this type of lure finish, all you need is green, black, and white. Using different ratios of white to green or black to green will give you all of the color variations you need for the lure.



Complementary Color Scheme

In this scheme, all of the colors used are opposites on the color wheel. A sample lure painted with complementary colors (purple and yellow) is shown in the image to the right. You'll probably notice that this color scheme tends to stand out more than the monochromatic colored lure. This is typical of lures painted in this fashion - people notice them (and so do fish!). The human eye tends to be drawn to items that contain complementary colors. Keep this mind when you're designing fishing lures to sell to the public; if a monochromatic lure is sitting on the shelf next to a complementary colored lure, the fishermen is more likely to buy the lure with complementary colors (assuming the paint job is good of course!).



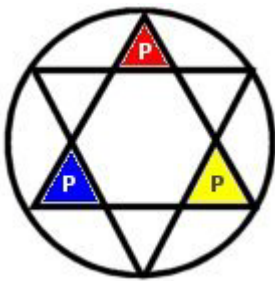
Analogous Color Scheme

Last, but not least, we have the analogous color scheme. In this approach to selecting colors, you choose 3 to 5 colors that are

adjacent to each other on the color wheel. The most famous analogous color scheme used on fishing lures is the classic "firedtiger" pattern consisting of bright green, yellow, and orange. We have heard rumors that lures with this sort of color scheme tend to land more fish. That would make sense because most sportfish cannot see all of the colors in the color wheel. By using this color scheme, chances are you'll include a color that the fish can see and recognize - increasing the chances of attraction.

Mixing Paints

Now that you know how colors work together, you'll need to know how to mix paints together to create the colors you need for your lures. To get started, you will need (at least) red, blue and yellow. You can create all other colors on the wheel by combining these basic colors and lightening or darkening them with white or black.



When you mix paints, you'll always want to add the the darker color to the lighter color until you get the desired color. For instance, when creating orange, you'll want to add small amounts of red to the yellow until you get the shade of orange that you're looking for. Use the color wheel to show what color will be created when you combine two colors (see Figure 3 above).



To lighten the color, add small amounts of white to it until you get the desired color:



To darken the color, add small amounts of black until you get the desired color:



Here are few final tips to help you with mixing your paints.

- 1) When you mix two colors together, the resulting color will always be darker than the brightest of the mixing colors.
- 2) Different types of paints mix differently and will not always produce the same result. Experiment with your specific type of paints (lacquer, vinyl, acrylic, etc.) to get the best mix.
- 3) Transparent paints can be painted on top of each other to create a new color. When painting with transparent paints, try to layer the darker paints over the lighter paints whenever possible.
- 4) Base coats will affect the color of the paints painted over them. Always start with a white or pearl base coat to get the best finish.

Choosing Colors that Catch Fish

Different Fish See Different Colors

In order to see color, a fish needs to have at least two cone cell types in its eyes. Bottom-dwelling fish (i.e. catfish) have only one type of cone cell so they see everything in shades of gray - they can determine an object's brightness, but not its color. Many shallow water surface-fish (i.e. trout, minnows, carp) have four cone cell types, allowing them to see all colors, including the hidden ones in the ultraviolet spectrum. Other fish such as the bluegill and the bass have two cone cell types, limiting their color distinctions to black, browns, greens and reds (and possibly yellows for the bass). Although most of these fish can discriminate between very fine shades of the colors they can see, this ability has no effect on what they select for food - recent tests have shown that, all other things being equal, the *shade/tint* of the color (bright red vs dark red) doesn't influence a fish's willingness to attack bait.

Unfortunately, there is no chart explaining the color viewing capabilities for each species of fish. With this in mind, it is best to make color selections based on color contrast rather than actual colors. For instance, pick a lure with two colors that would appear differently, regardless of their actual color. Here is an example of how a some fish might see a blue and red lure - notice the color contrast exists in all three views:

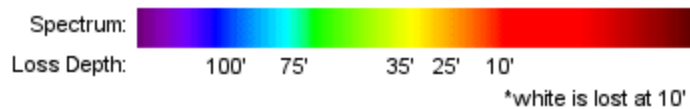


*Note: this is based on scientific assumptions. Further study is needed to verify the color viewing abilities of bass

Color Filtration in Water

Water filters light. And since all color is actually colored light, water will filter colors. Certain colors cannot be seen below certain depths because light is broken apart when it hits the water and certain wavelengths (colors) are filtered out. The severity of this filter depends on the clarity of the water, wind conditions, time of day and lure depth; dirty water, high winds, deep water, and evening hours mean fewer colors. To understand these effects, we must first understand the relationship between light and water.

The colors of the spectrum (the colors of light) are Red, Orange, Yellow, Green, Blue, Indigo, and Violet. A mixture of all of these colors produces white. If an angler were to stand in the center of a very deep lake and shine a bright light into it, the colors within the light beam would gradually disappear as it traveled toward the bottom. At 10 feet, red is almost gone, orange is disappearing, and yellow is starting to fade away. At 35 feet, orange is gone, and yellow is quickly disappearing. At 75 feet, yellow looks greenish-blue and the only visible colors are blue, indigo and violet. As we pass 150 feet, blue and indigo are hard to see and violet is disappearing. At a few hundred feet, ultraviolet is the only color left, and it is not visible to the human eye anyway.



Neon colors, however, do not disappear when the spectrum colors do. This is because they "fluoresce", meaning that they glow when hit by ultraviolet light. We have heard reports of brightly visible fluorescent pink and yellow colors at depths of 125 feet and deeper!

Keep in mind, however, that these water color filtration rates assume that the water is crystal clear. Pollutants, sediment, and wind can drastically affect these numbers by rearranging the filtration order and decreasing the overall depths of all colors. Under these circumstances, red-orange seems to be the most visible, assuming that your lure depth is not greater than 20 feet. That said, here are some tips from anglers on how to pick lure color:

Super Clear: White or clear. Use glitter for color. All colors are visible to 10 feet.

Clear Water: Blue is most visible. White is visible. All colors are slightly visible to 10 feet.

Green Water: Green is most visible.

Stained Water: Orange, green, and chartreuse are most visible. Red is slightly visible.

Muddy Water: Red is most visible.

Here are some additional suggestions to help with low light (first light until sunup), medium light (sunup until the sun reaches 20 degrees to the horizon), and high light (from 20 degrees to the opposite horizon) conditions:

Low Light: Blue, purple or black work best. Use with silver flash.

Medium Light: Red and orange work best.

High Light: Brown or gray work best. Use with fluorescent accents.

NOTE: When the light level falls below 0.1 foot candle (clear night, no moon), all colors become just shades of gray and cannot be seen by the fish.