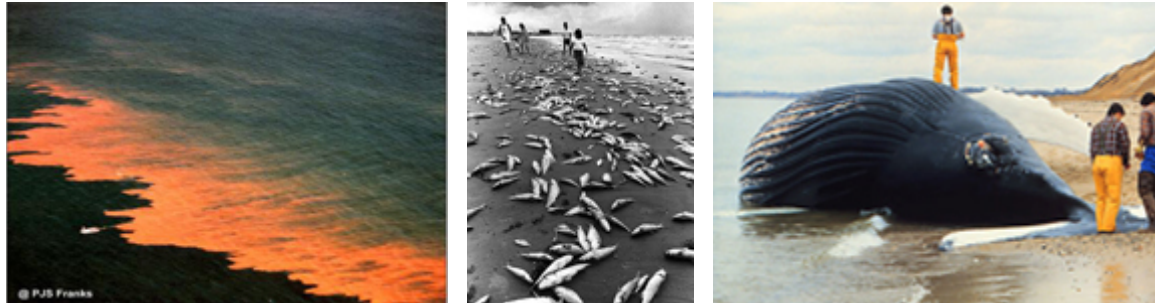


When a Bloom Turns Harmful

Harmful Algal Blooms (HABs) generally occur when algae (either seaweed or phytoplankton) produce toxic or negative effects on [marine ecosystems](#), [wildlife](#), [human health](#) and [global economies](#). View a short NOAA video [Predicting HABs](#)



No one knows exactly why blooms occur or why they release toxins. There could be a variety of reasons and circumstances as to when a bloom takes place and whether or not it becomes toxic.

Not all blooms are toxic, so researchers can only hypothesize why some algal species release toxins that can either immediately kill marine grazers or build up in the food chain, causing harm to top predators like sea lions and humans.

There are several hypotheses as to why algae release toxins:

1. Acquire or detoxify certain nutrients in the environment
2. Protect the algae from grazers such as krill and anchovies
3. Prevent or minimize the growth of other algae competing for the same resources

It is difficult to say which explanation is correct, and it may be that it's a combination of factors. Furthermore, some scientists believe that the toxins are natural byproducts of the algae's metabolism and are helpful enough that they have not been eliminated by evolutionary processes—so they may have no “function” at all.

What Do Researchers Look For?

During a HAB event, scientists generally look for 3 things:

1. Presence of the organism through cell counts and DNA sampling
2. Presence of a toxin
3. Harm or impact on the ecosystem, economy and/ or human health



In looking for these answers, researchers can start to identify if it's a harmful algal bloom or not, and if it is then they can ask more specific questions regarding cell abundance levels, location, distribution, and impacts. If it is not, then it's simply deemed as a "potential" HAB event until cell and toxins reach dangerous, harmful levels.

In the case of a red tide, researchers acknowledge that there is a large bloom of dinoflagellates (almost all "red tides" are caused by dinoflagellates), but they cannot consider it a HAB event until there is noticeable harm being done to the environment. Usually the first impact is seen in sick pelicans or dead sea lions, which is a good indicator that there is a harmful bloom nearby.

Want to know the most harmful algal species in the region? Visit our [California's Most Wanted HAB Species](#) page