

## FLOW: Amigos de Bolsa Chica Citizen Science Program

### Plankton Collection and Identification Report

Date: 04/12/13 Time: 14:44 PM

Collectors: Dennis P., Sandy M., Chuck D., Dave C. and Joana T.

Tide: ebb (going out) last high: 12:30PM

Secchi: N/A

Temp.: 18C

Salinity: 35 ppt

pH: 8.0

Nitrates: 0 ppm

Phosphates: 0.25 ppm

Ammonia: 0.25 - 0.50 ppm

Weather/ wind: Sunny/ clear w/ strong onshore wind (approx. 15 mph)

#### Summary:

We- Dennis, Sandy, Chuck, Dave and Joana- collected plankton at the Tidal Inlet on this beautiful, sunny and windy afternoon. We then went back to the Visitor Center where we measured nutrients and pH and we observed samples under the microscope. We noticed a significant decrease in the concentration of the potentially harmful genus of diatom *Pseudo-nitzschia* spp. (which has dominated the plankton for the past 4 weeks). We noticed an increase in the variety of species and genus present in the water; although *Pseudo-nitzschia* spp. still seems to be the most abundant phytoplankton group in the samples, other diatoms and dinoflagellates were present in medium to high concentration.

Nutrients and pH were within expected ranges.




Here are a few species and genera of plankton that we observed, identified and photographed under the microscope today. (See complete list of organisms observed at the end).



*Dinophysis acuminata*

*Dinophysis acuminata* is marine, planktonic dinoflagellate species. It is a potentially toxic species that may produce ocaidaic acid and blooms of this species have been associated with DSP events. It is commonly found in coastal waters of the northern Atlantic and Pacific Oceans. The most extensive blooms have been reported from the summer and fall months in many parts of the world.

The abundance observed in today's sample was low to medium (higher than last week's)

 <p><i>Dinophysis rotundata</i></p>	<p><i>Dinophysis rotundata</i> is an armoured, marine, planktonic dinoflagellate species. It is a toxic heterotrophic species widely distributed in cold and warm waters. <i>D. rotundata</i> is a toxic species producing the diarrhetic shellfish poison (DSP) toxin Dinophysistoxin-1 (DTX1). However, only Japanese strains of this species have been found to produce the toxins; North American strains have proved non-toxic. <i>D. rotundata</i> is a cosmopolitan species widely distributed in cold and warm waters</p> <p>The abundance observed in today's sample was very low</p>
 <p><i>Protoperdinium</i> sp.</p>	<p><i>Protoperdinium</i> is a type of marine armored dinoflagellate. Although often listed as a type of phytoplankton (mainly due to the fact that they are dinoflagellates), most species within this genus lack chloroplasts and therefore are heterotrophic (i.e. they graze on diatoms and other planktonic organisms). The genus has several species, none associated with potentially harmful effects or toxins and it is cosmopolitan (i.e. widespread throughout the world).</p> <p>The abundance of <i>Protoperdinium</i> observed in today's sample was low to medium</p>
 <p><i>Ceratium</i> cf. <i>divaricatum</i></p>	<p>Distribution of <i>C. divaricatum</i> is wider than previously documented (mainly because of previous misidentifications): the North Pacific Ocean, from British Columbia in Canada to temperate or subtropical waters of Mexico, and then is interrupted to reappear again in coasts of Peru and Chile, and also in coasts of the Benguela area, the South-west Atlantic Ocean. In tropical and equatorial areas of the Pacific Ocean, a more delicate form occurs, herein proposed as a variety of this species: <i>Ceratium divaricatum</i> var. <i>balechii</i>. <i>C. divaricatum</i> and var. <i>balechii</i> may be relatively abundant, even producing non-toxic red tides, in various spots along coasts of the Pacific Ocean (Canada to Mexico). It appears to be a neritic form, with high sensibility to changes in water temperature, and presumably associated to upwelling areas. <i>Ceratium divaricatum</i> was reported as "common to abundant between San Mateo and Sonoma counties by the end of the month of September of 2011.</p> <p>The abundance of <i>C. divaricatum</i> in today's sample was very low.</p>



*Polykrikos cf. schwartzii*

*Polykrikos schwartzii* is a marine athecate dinoflagellate. It is heterotrophic and therefore lacks chloroplasts. *P. schwartzii* occurs in colonies of 2, 4, 8 or 16 individual units called zooids. Each zooid is closely connected to its neighbor, sharing a cell membrane and a common

This species is mainly coastal and estuarine

*P. schwartzii* is common in coastal waters throughout the world except for polar seas. It is mostly confused for *P. kofoidii* hence, exact distribution is not known. It is also often seen in surface sediments from tropical to sub-arctic coastal regions. *P. schwartzii* is mostly seen in summer and autumn. High abundance of *P. schwartzii* cysts is used to indicate high nutrients.

The abundance of *Polykrikos* sp. in today's sample was very low.



*Prorocentrum micans*

*P. micans* is a marine bloom-forming dinoflagellate. This is a cosmopolitan species in cold temperate to tropical waters. Although *P. micans* is capable of forming extensive blooms, it is usually considered harmless. It may excrete substances that inhibit diatom growth, but apparently these substances do not enter the food chain or affect organisms at higher trophic levels.

The concentration of *P. micans* observed in today's sample was very medium-high



*Pseudo-nitzschia* spp.

The genus ***Pseudo-nitzschia*** includes several species of marine diatoms known to produce the neurotoxin known as **domoic acid**, a toxin which is responsible for the human illness called **amnesic shellfish poisoning**. This genus of phytoplankton is known to form **harmful algal blooms** in coastal waters of Canada, California, Oregon, Washington state, Europe, Asia, Australia, New Zealand, Central America, and South America.

The abundance of *Pseudo-nitzschia* in the sample analyzed today was medium to high (lower than last week's concentration)

Plankton ID	
04/12/13	Conc/ Abundance
<i>Pseudo-nitzchia</i> spp.	Common/ High
<i>Skeletonema</i> sp.	Low-medium
<i>Chaetoceros</i> spp.	Low
<i>Protooperidium</i> sp.	Low-medium
<i>Ceratium</i> spp.	Medium-high
<i>Polykrikos</i> spp.	Low
<i>Prorocentrum micans</i>	Medium
<i>Dinophysis acuminata</i>	Low- medium