

BAYLANDS

Tides

Tides play a great part in the living and ever changing nature of the Palo Alto Baylands. They create the constant movement of bay waters which affect every plant and animal in this ecosystem. For example when the bay waters are at low tide, exposing the mud flats, hundreds of shore birds scurry about searching for the food in this rich resource. Then, when the waters return to their highest levels and flood the mud flats and marsh lands, ducks take their turn feeding on the small fish and other edibles the water brings to them.

Tides are strongly affected by the lunar cycle. A lunar day is 24 hours and 50 minutes. So every lunar day creates nearly, but not quite, two high and two low tides each earth day.

The interval between high tide in the morning and the high tide in the afternoon or evening is 12 hours and 25 minutes. So if high tide today was at 6:00 am, the next high tide will be at 6:25 pm, then again at 6:50 the next morning and 7:15 that evening and so on. Of course the same interval is true for low tide.

The position of the moon also affects how high the tide waters will be. The days between the full

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moon and the first quarter moon each month is when the tide waters are at their most extreme: high tides are at their highest and low tides at their lowest. These are called spring tides. The word spring comes from the term "springing" or "lively" waters, not the season of the year.

During the first and last quarters of the moon each month, the difference between high and low tide is less extreme. These tides are called neap tides. The word neap comes from the Anglo-Saxon word *nep*, which means scant or lacking.

Tides are affected by events in nature such as strong winds and high or low barometric pressure. They are also affected by the configuration of the sea floor, and the total mass of water in a bay and the shape of the channels through which it flows.

In San Francisco Bay tides are not as extreme as they are in many ports of the world. In some seaports in Europe for example, the high and low tide water levels can have a difference of 65 feet or more. Special docks must be built for ships when such huge water level fluctuations occur.

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