

The Lake Merritt Institute

And CENTER FOR URBAN RUNOFF AND WATERSHED RESEARCH

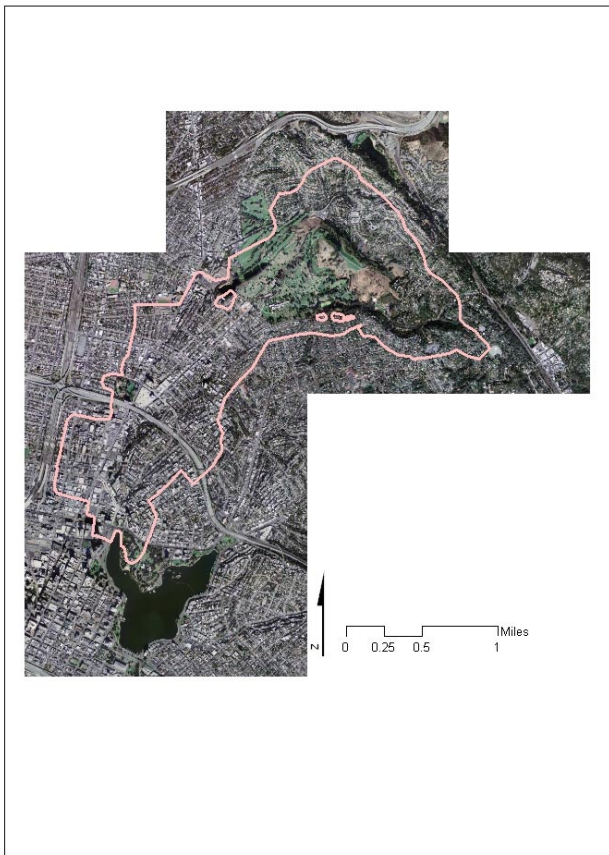
568 Bellevue Avenue, Oakland, CA 94610; 510/238-2290; lmi@netwiz.net; www.lakemerrittinstitute.org

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GIS PROJECT – The Glen Echo Creek Watershed: The photo shown below is actually an information layer in a geographical information system. It depicts the boundaries of the Glen Echo Creek watershed, which of course drains directly into Lake Merritt. Members who live in this watershed, can you find your house? If you could access this layer, you would be able to designate an area and expand it on the computer screen, then expand again and again until reaching the resolution of aerial photos that were digitized to create this layer, and you could see your house. When the project is complete, you would be able to superimpose other layers over the base aerial photo layer, and see such things as underground storm drains near your house, creeks, zoning,, and more.



To date, we have received digitized data from the San Francisco Estuary Institute, the City of Oakland and William Lettis & Associates (a hearty “Thank You” to all of them). We also plan to create our own GPS data for storm drain inlets, and other data pertinent to a hydrological model. When complete, we will be able to calculate the extent of impermeable surfaces (streets, rooftops, sidewalks etc.) in the watershed from which water rushes off during a rainstorm.

Giorgio Bianchi, who started our fledgling GIS project, has gone to New Mexico and we would like to replace him with a GIS intern. Limited funding is available. If you know of anyone with a GIS background and who may be interested, please ask them to contact us.

OOPS – THEY’RE PROBABLY NOT CARP: Kudos to Chris Ward who lives near Tyson Lake and has provided valuable information on the likely source of big fish in Lake Merritt (see last months newsletter). For about 100 years,

dozens of large koi (a highly bred relative of goldfish and carp) have lived in the 1.5 acre, 28 foot deep Tyson Lake at the northern edge of our watershed. Over that time their color has reverted to their normal black as opposed to white, orange and red. When 8.8 inches of rain fell in March, it is likely

that several of the big fish went with it over the spillway. Look for them the next time you go by the columns.

JOIN THE JLAC JUNIOR WOMEN'S ROWING TEAM: You are invited to an open-house at the Jack London Aquatic Center, on Sunday, September 10, 2006 from 2 to 4 pm. The JLAC is located in Estuary Park, on the Embarcadero, between Oak Street and 5th Avenue, about one mile south of Jack London Square. Meet coach Abby Loughrey and team captains Mari Acosta (Skyline H.S.) and Emerald Jones (Oakland Tech H.S.). Learn more about the sport of rowing. Talk to returning rowers and their families. For more information, go to www.jlac.org or telephone 510-208-6060.

The JLAC Junior Women's Rowing Team is for high-school aged girls who either live in Oakland or attend Oakland high schools. The team will row after school, Monday through Thursday, September 2006 through May 2007. It will compete against other Bay Area high school crews, and at the State championship in Sacramento in May 2007. The returning rowers are students at McClymonds, Oakland Tech, Skyline and Castlemont high schools. (Look for JLAC when you register for classes at McClymonds, Oakland, Oakland Tech and Skyline High Schools!).

No rowing or swimming experience is necessary. The program includes swimming lessons, and transportation from high school to the Aquatic Center. Participation fee is \$135 per semester; partial grants are available. *This could be your sport!* Many young women find that rowing is the sport that is the perfect combination of fitness and fun. Rowing builds strength, rewards teamwork, and can open doors to college and scholarship opportunities.

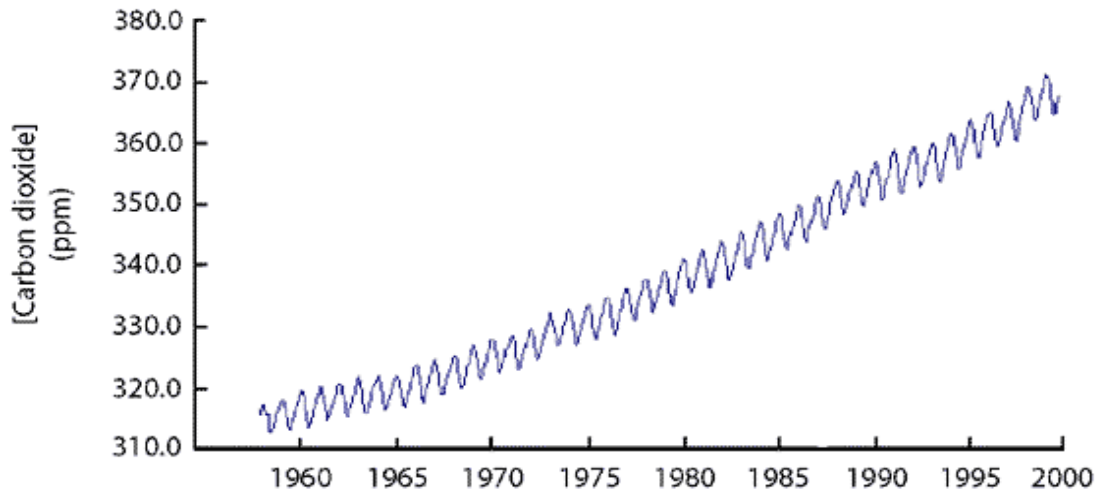


GLOBAL WARMING: THE SKY ISN'T FALLING, BUT IT IS GETTING HOTTER – Wither Lake Merritt? After decades of study based on thousands of years of data, the verdict is in: The earth is getting hotter. Considering average global temperatures since 1865, 20 out of 21 of the hottest years measured have occurred in the last 25 years! Most of these increases are due to carbon dioxide (CO₂) which is known to trap heat in the earth's atmosphere. Over a period of 650,000 years, levels of CO₂ closely match deviations from the earth's mean temperature, clearly showing both ice ages, heat waves and today's mild climate.

At no time in these 650 centuries up to the industrial age have CO₂ levels been above 300 parts per million (ppm). Today, CO₂ levels stand at about 370 ppm, and are rising at about 1.8 – 2.6 ppm per year. These levels are projected to reach 450 ppm (or more) by the year 2050. Considering that ice ages occur when CO₂ levels are at 160 ppm (a drop of 140 from CO₂ levels related to recent mild

temperatures) what will our climate be with this projected increase of 150 ppm? Note that in 1999, it was projected that 1,442 new coal-fired power plants will be built by the year 2030, and that in 2002, coal contributed 41% of the CO₂ released into the atmosphere. Note also that CO₂ remains in the atmosphere for about a century. We are rapidly putting the earth on a path that has never occurred before, and with unknown, but most likely dire, consequences.

Keeling Curve of Atmospheric Carbon Dioxide from Mauna Loa, Hawaii



Is Lake Merritt getting warmer? Essentially, the available data set is not adequate to determine this. A regression (statistical) analysis of most of the known data (twelve months in 1972-3 and sporadic data from 1990 to the present – with several gaps) indicates that surface temperatures may have actually dropped by a few degrees F. in the last few decades. But considering the limited data and numerous gaps, the record is too limited to be certain. In addition, changes in operation of the tide gates during these years and Lake-wide dredging in the mid '80's have undoubtedly impacted Lake temperatures. Also, methods used to measure and record data over the years have been quite variable. It is interesting to note however, that minimum temperatures from the mid 1990's and 2005 do indicate a considerable warming trend, and that the oceans in general have been warming.

What will happen to Lake Merritt as the earth gets hotter? Global warming manifests itself in many ways, not the least of which is flooding due to changed rainfall patterns and sea level rise. Our Lake however, is protected from flooding (to a certain point) by tide gates and pumps. More common storms will not cause the Lake to flood. But if, as many predict, CO₂ levels continue to increase and either the Greenland ice sheet melts (about 1/3 of it is melting now) or the west Antarctic ice shelf melts (ocean temperatures under it have warmed) or half of each melts, sea level rise would be between 18 and 20 feet, and the Lake would be only a few feet above sea level. By the way, the entire City of Alameda would be under water. The Lake would not quite be joined to the Bay, but the tide gates and pump station might be under water (as well as Jack London Square and much of the Port).

What is more certain is that we will see a change in the distribution of plants, animals and people, as has been already documented elsewhere. Formal monitoring of the Lake does not include life forms, but we did notice wire weed for the first time a few years ago, and a very large decrease in spring algae and summer widgeon grass during the last three years. As the Lake warms, red tide plankton blooms,

which thrive in hotter water, will become more prevalent. It is also likely that disease vectors will increase, the Lake will become more acidic (as have the oceans in general due to global warming) and air temperatures will be much hotter. A more acid Lake would reduce the prevalence of animals that build calcium carbonate houses, such as our tube worms, clams and mussels.

An increase in rainfall is also possible since warmer air holds more moisture. This would mean a less salty Lake, and more urban runoff. Combined with increased tide gate closures for flood control, this will cause (unless a mixing system is installed) more and longer periods of stratification, leading to more and longer periods of very low oxygen levels, especially in the bottom layers. An increase in tide gate closures has already been documented along the Thames River in London where between 1990 and 1999, rising sea levels caused the gates to be closed more than twice as many times per year compared to the period from 1931 to 1990. Global warming is not a prediction, it has started.

MONTHLY BIRD REPORT – By Correspondent Hilary Powers: [A Break from the Heat.](#)

It was gray and cool enough for a jacket (remember jackets?) when we set off on the July Golden Gate Audubon bird walk at Lake Merritt - but it soon cleared and warmed up enough for shirtsleeves to be comfortable. It warmed no further, amazingly enough, though we spent much of our chat time musing about where the glaciers are melting this year and how "obviously" global warming isn't a factor. . . .

In terms of sheer numbers of kinds of birds, July is about as quiet as it gets at the lake. We saw only 22 different species, but got marvelous looks at those we did see: this year's Cooper's Hawk siblings playing tag with each other and terrorizing the pigeon flock by the spherical cage, for instance, and a whole family of baby Black Phoebes chasing each other and their parents around the bowling lawn. You can recognize the babies of both species easily - the Coops are chocolate brown with vertical brown streaks on their cream-colored breasts instead of gray with horizontal rust barring like their parents, and the phoebes have fawn scallops along their wings instead of clear black - and this bunch were young enough to still have the yellow gape at the sides of their beaks, the loose flesh that allows a baby bird to open extra wide when a meal arrives.

Over the lake, the Forster's Terns were out in force, quick and graceful as gray lightning, and we saw one hulking Caspian tern hunting for something to snap up with the cocktail frank it uses for a beak. Some of the cormorants still have babies in their nests, but most of this year's brood have fledged - still easily recognized as youngsters by their radiant tan feathers (the adults are blue-black). The Great Egrets have been and gone - we saw only one bird - but the last of the Snowy Egrets are feeding their youngsters, and a lot of the new birds are flapping about hoping some adult will feed them. Mature Snowies have black legs and bright yellow feet; you can recognize the babies because their legs are all greenish, somewhat lighter on the feet. There's almost no size difference - except for birds like the geese that can feed themselves almost from birth, you'll almost never see a "little" baby bird; they don't leave the nest until they're just about as big as their parents.

The rescue White Pelican has given up hoping for a mate; its beak is all smooth along the top, without the breeding bump that was so visible last month. (That bird will be out of luck every year, most likely, as this isn't nesting country for pelicans - but at least it'll have the years. It's unable to fly, and Lake Merritt is one of the few places it can live anything like a normal life.) So there's still lots to see at Lake Merritt - as there always is.

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To contribute to the Lake Merritt Institute, contact us at 510-238-2290 or 568 Bellevue Avenue, Oakland, CA 94610.*

