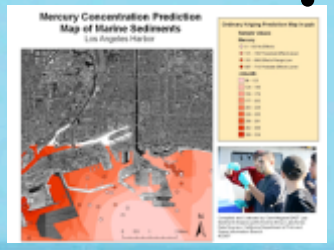
Environmental Issue Addressed:

The threat to waterways and oceans and its affects on the lobster population

- Biomagnification of inorganic and organic pollutants in marine life can have serious health effects on the people who consume them.
- Our focus is on the issue of organic and inorganic contamination in lobster around the world.
- In our earlier project we found high levels of CAM-17 heavy metals in California lobster.
- Arsenic, Mercury Copper, Cadmium Lead and Zinc had levels exceeding EPA guidelines.



- Lobster is an important commercial and recreational food species.
- We chose lobster as an indicator of the contamination in local and global waters.
- With lobster in California found to be contaminated, the purpose of this study is to see how far that contamination extends throughout the world.
- We will incorporate testing for organic contaminants as well as inorganic to see if the lobster is truly safe to eat.

The California spiny lobster (*Panulirus interruptus*) is native to the California coast.

Part I

Evaluation/Quantifiable Results

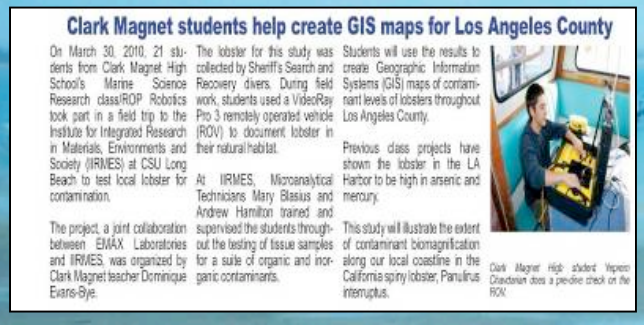
- **Successes include:**
  - **Community involvement:12 lobster samples donated from Santa Monica Seafood Company, 12 from local divers.**
  - **Student involvement: 42 students participated in tissue testing at IIRMES lab at CSU Long Beach.**
  - **30 GIS maps produced for each contaminant present in samples.**
  - **Invited by the Los Angeles Geographic Information Officer to present project at the Department of Public Works headquarters GIS-Day event with hundreds of participants.**

- A presentation at our school health fair informed our teachers and peers of the drawbacks of eating lobster.

- We quantified organic and inorganic contamination in lobster at select locations around the world and illustrated problem areas in our maps.

- Newsletter with our project was distributed to 2,620 people.

- The results of our study will impact anyone who eats lobster when full results are published in *California Diving News*.



Clark Magnet students help create GIS maps for Los Angeles County

On March 30, 2010, 21 students from Clark Magnet High School's Marine Science Research class/ROP Robotics took part in a field trip to the Institute for Integrated Research in Materials, Environments and Society (IIRMES) at CSU Long Beach to test local lobster for contamination.

The project, a joint collaboration between EMAX Laboratories and IIRMES, was organized by Clark Magnet teacher Dominique Evans-Bye.

The lobster for this study was collected by Sheriff's Search and Recovery divers. During field work, students used a VideoRay Pro 3 remotely operated vehicle (ROV) to document lobster in their natural habitat.

At IIRMES, Microanalytical Technicians Mary Blasius and Andrew Hamilton trained and supervised the students throughout the testing of tissue samples for a suite of organic and inorganic contaminants.

Students will use the results to create Geographic Information Systems (GIS) maps of contaminant levels of lobsters throughout Los Angeles County.

Previous class projects have shown the lobster in the LA Harbor to be high in arsenic and mercury.

This study will illustrate the extent of contaminant biomagnification along our local coastline in the California spiny lobster, Panulirus interruptus.

Clark Magnet High student Yepremi Ghazarian does a pre-dive check on the ROV.

Latitude	Longitude	Date	Location	Depth	Carapace Length	Total Length	Gender	Code
34.044249	-118.946928	10/3/09	LeoCarillo	13ft	3.75"	10.5"	Male	1.1
34.044249	-118.946928	10/3/09	LeoCarillo	13ft	3.75"	10.5"	Female	1.2
33.810479	-118.401360	10/11/09	MalagaCove	18ft	4"	11.25"	Male	2.1
33.810479	-118.401360	10/11/09	MalagaCove	18ft	4"	11.5"	Female	2.2
33.810479	-118.401360	10/11/09	MalagaCove	18ft	3.75"	10.75"	Female	2.3
33.810479	-118.401360	10/11/09	MalagaCove	18ft	4"	11"	Female	2.4
33.810479	-118.401360	10/11/09	MalagaCove	18ft	4.2"	12"	Male	2.5
33.984808	-119.597831	11/8/09	SantaCruz	15ft	3.75"	11"	Female	3.1
34.0111	-119.41352	1/9/10	Pelican Rookery	28ft	7"	16.75"	Male	4.1
34.0111	-119.41352	1/9/10	Pelican Rookery	23ft	5.75"	15"	Female	4.2

Raising Awareness/What We Learned/ Potential Winnings

- Presentations include:
  - the Environmental Club.
  - LA Co. Department of Public Works GIS Day event.
  - School Health Fair
  - GUSD Board of Education
  - CSUN Poster Symposium April 23
- Our project was featured in the IIRMES Annual Report at California State University Long Beach.
- Our project was featured in a newsletter to all of GUSD (Glendale Unified School District).
- School newspaper (*Clark Chronicle*) published articles about our project.
- Our project was written up in the Montrose Patch
- Submitting articles to:
  - California Diving News
  - Underwater Magazine
  - Marine Technology Society Journal
  - USC Quik Science Challenge
  - Journal of Student Research Abstracts

- We learned that lobsters and potentially other marine life species have traces of contamination that are harmful if consumed by humans.
- We learned how to do professional level tissue analysis.
- We learned the value of project management and organizational skills.
- Our team plans to put any money we receive towards our college education.
- Yeprem: Occidental College
- Steve: UC San Diego
- Brian: Portland State
- Edward: CSU, Northridge
- Tania: Glendale Community College
- Our teacher needs to replace and maintain underwater research equipment for our class. She would also like to take more GIS courses at CSU, Northridge.

IIRMES Annual Report September 30, 2009

PUBLICATIONS/PRESENTATIONS cont.

Chavdarian, Y., Higgins, B., Kechichian, S., Kazaryan, E. and Khanlari, T. Organic and Inorganic Contamination in California Spiny Lobster, *Panulirus interruptus*. Highlights of the Lexus Eco Challenge. County Department of Public Works HQ. Alhambra, CA. Nov. 2010.

Part IV

Microsoft Excel - global_lobster2.xls [Read-Only]

File Edit View Insert Format Tools Data Window Help

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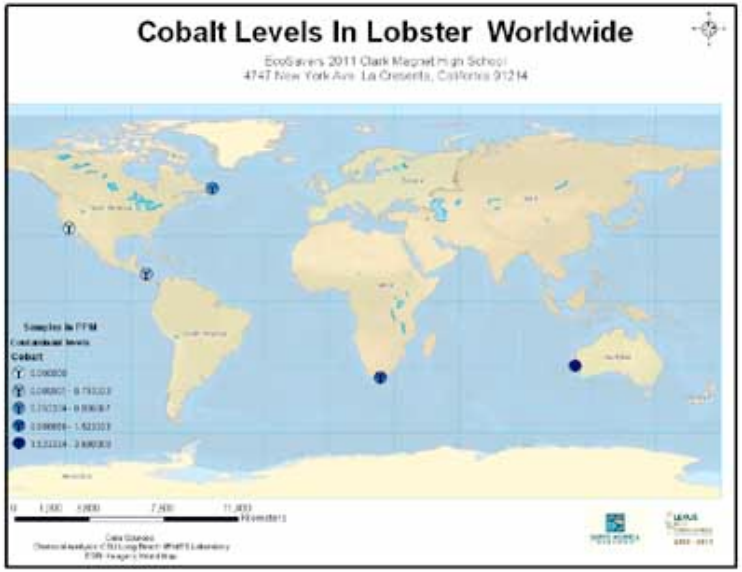
	A	B	C	D	E	F	G	H	I	J
1	location	species	longitude	latitude	As	Cr	Co	Cu	Sr	Zn
2	West Australia	P. Cygnus	113.407	-29.301	14.68667	3.3	3.69	2.703	2.35	10.461
3	South Africa	P. Delagaac	24.247	-34.407	34.83667	3.993333	1.523333	4.591333	1.98	17.25333
4	Nicaragua	P. Argus	-83.255	12.839	25.10133	3.576667	0.753333	2.144	2.48	13.79667
5	East Canada	H. americanus	-52.969	51.754	5.257667	4.243333	0.806667	2.095667	2.806667	14.15333
6	California	P. interruptus	-118.426	33.86	22.43952	7.681922	0	5.61	2.480748	18.40641

Data Sheet for Global Lobster



Project Gallery