









Science
Leadership
Program
2023

Students, mentors, and HRPT staff at Pier 57.

## What is SLP?

The Science Leadership Program (SLP) is a paid summer research opportunity for high school aged, female-identifying students from underrepresented communities in STEM in New York City.

This program is a collaboration of STEM institutions in NYC

- Hudson River Park's River Project
- City College of New York (CCNY)
- Young Women's Leadership School (TYWLS)
- Pinkerton Foundation
- Intrepid Sea, Air, and Space Museum
- Lahmont-Doherty Earth Observatory



Checking habitat mop at Pier 40.



Checking fish traps at Pier 26.

## Goals of SLP:

Gain experience and confidence in STEM through authentic research, professional development workshops, and near-peer mentorship

Complete the summer program with a stronger scientific identity, a better understanding of STEM careers and opportunities, and greater exposure to scientific methods and techniques

# **Program Schedule**

#### Mondays and Tuesdays are remote

- Workshops led by HRPT staff and Consortium partners
- Research on gull bolus research project

#### **Wednesdays and Thursdays are in-person**

- Hands-on research in Hudson River Park
- Field trips
- Presentation and public speaking practice
- Peer Chats

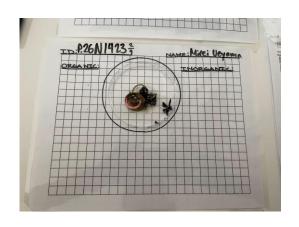


Interns at CCNY with Dr. Karin Block.

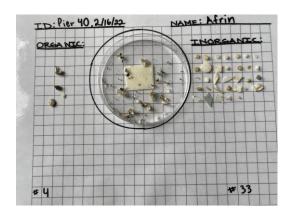


Interns performing water quality analysis at Pier 40.

# **Gull Bolus Project**



Gull bolus on dissection sheet.



Bolus separated into organic and inorganic categories.



Materials separated by type.



Inorganic and organic matter stored separately in glass vials.

## **Gull Bolus Poster Presentations**

Background

Ring-billed gulls are opportunistic feeders

(Fast, 2023). They eat whatever they see

and can get a hold of Sometimes that can

be organic things like fish, insects but

sometimes it can be inorganic materials

like plastic because of the sent it lets out

(Lissa, 2022). During the dissection of the

seaguil boluses there were many colorful

inorganic materials. Which resulted in my

curiosity regarding which colors were

Methods

. Boluses were dissected thoroughly and

organized into organic and inorganic

piles while also taking note of the size,

· Inorganic materials were grouped and

. The sums of each color were then

Administration.

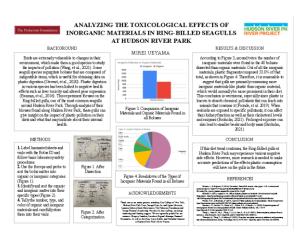
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the finder, and these times the many other finals the method.)

most ingested by the seagulls.

and the color

separated by the color

calculated and charted



SLP scientific poster.

Zihan Wang's SLP scientific poster.

Mirei Uevama's

seaguils ingest the most future research can be about why seagulis ingest more white. Lizbeth Flores' SLP scientific poster.

Lissa Abreu's

SLP scientific

poster.

Conclusion What color of inorganic materials are seaguils most likely ingesting? Apossible reasoning for this question is that blue could be ingested the most because it's the same color as water. But according to Figure #2 that would be incorrect. White is the color most ingested. Using the data that has been definered. After work could be done to find out why write is most ingested. California State science created a scientific test where Together to the control of the contr tovels of different colors were laid out. They then observed which color the seaguls had a preference for. They picked mainly the green toyel (Kameman, 2014), providing evidence for the notion that seaguils do have dietary biases for

Results/ Discussion
Out of all the colors, white was the color that

seagulis ingested the most. This is known

because the data (figure #1) shows a higher

amount of white articles extracted from the

boluses both figures it shows a greater value

of white in the holises that were discerted

After finding out that white is the color

Difference in Regurgitated Plastics Recovered from Gull Boluses at Piers 26 and 40 at Hudson River Park Background Figure 1. Inorganic material found in P40 between Results At Hudson River Puls we collected a total of 40 bolus samples and dissected the regargizated bolks ' to infer how much plastic the reagalls had consumed. A bolks is "a pellet that's created by Prognants were the most common plastic found in a bolist.
 On weeing the gunnts made up 54% of nonganic materials in 140 bolisms and 53.4% of nonganic material in 126 (Fig. 1 & Fig. 2). bird of all the stuff a bird con't disset" ( Ho oper dt Poskie 2019). Using the data that we had gethered we noticed a lot of burranic material found within our coamil bulines. This is Fig. 1 & Fig. 2).
 Four made up 14.8% of inorganic material in F26 behave and 5.6% in P40 behas on average, (Fig. 2 dt Fig. 2). important because it shows the effects that plastic pollution car ave on our wildlife. While I was collecting my data I noticed the carenies collected were either from Pier 40 or Pier 26 this Pellete made up 16.3% of inorganic material in P40 bolts and 13.8% of inorganic material in P26 bolts (Fig. 1 & made me wonder whether the location had a part to p ler in th smount of plants consumption found in the behaver. Which led me to my research question, is there a difference in plants: consumption between F16 and P40 belones? Murdles made up 0.9% of inorganic material in P40 bolts and 7.4% in P26 bolts (Fig. 1 & Fig. 2). Methods Conclusion/discussion Figure 2. Inorganic material found in P26 boluses. Received was conducted by SLP interpretarough the direction of Seagalls are opportunistic Roders, this means that wherever reagal belows collected from For 40 and For 26.

1) This the bolic out of the freezer I hour before directing Take out all of the materials and set up a work space (this iso lates a prob., Parceps, marroscope, glower etc.) their health such as the hird's billness function, a bisher Wife down the boks ID and stacked the petri dish to the landsated grid paper with a piece of tape. concentrations of unic acid, as well as have negative effect their cholesterol and empress ( Brokolm, 2021 ). This is 4) Start reparating inorganic and regards materials (Fig. 3). extremely tragic and the dissection of a gull holus truly show how muck plastic pollution affects these animals. My weekers Categorie the isorgenic and organic materials into the different frace (Fig. 4). shows what the most common types of plastic are that are found in Pier 40 and Pier 26 bolues. I found the most Write down your finding on your data doest and put your increase and organic materials in two different labeled visit prominent type of plastics found in gull bolines are fragments, fram pellets, and modiles. Both P40 and P26 bolines share similar data this makes me balieve that the different locations in Figure 4 Dissection process Separating inogenic and organic material into different inognic vs ognic. which they were found does not have a direct correlation on the types of practic found within the regargitated person. I believe that these wasn't enough data to prove my hypothes and if these were more samples from P26 the data gethered reight been have more accurate. However, Theliam in the fatur mgr data could be used to see each the most pro-plastic found within a gull bohu. Supp. F (BIG, Hash III) Wenglasto march facousies policy fragi nh you is our n surgatters including city cole ge of My, Bakens Keer Peds, Intropid Sa., Air, and Opera Moreaus, Luncet. Debuty Karth Chormater, The Publisher nebition and Young Wilson. Leadershy Meteoric for four ending, wordersp backening outputs. On we sepecially getheld to extraction; On grey Fands askin: Kypin Alson, Dannal Homania, Arvenius & Colin, Centra Rolls, and Kitcheld Minora, at Madein Kiner Hoyel. The Pinkerton Foundation

Organic vs. Inorganic Material: A Look Into Implications and Health of Gulls in Hudson River Park Zihan Wang, Hudson River Park Trust Results We observed a total of 2029 pieces of material, with 61.0% To determine the ratio of organic to inorganic material found in Inorganic on Organic Materials in Seaged Boluses (Fig. 1) council bolices, we discorted and corted formeds to amil bolices

located at Plan 40 and Plan 26. We found a rignific out disputly between the 1900 places of organic material and the 1439 prorgani ninces. This can provide important incide into the detary and tixes of seagails and the highly stices that has on-ou

Background The Hadron Steer Pair is an important part of the New Yorks ecosystem, housing four different species of galls. These birds typically feed on organisms found in the Hadron Finer and around the River. In part years, an increase in politization has led to on increase to place in motion in each back drom only 5% of stalk found with inorganic materia Base & dito over 1,000,000 de after of birds every single year (Brokelin, 2021). Our mal is to use this data to better undertend and rates awareness on publishm and guilli-rabb

they #1 Bolisses are collected from different piers in the Hudson.

Step #2: Start directing by certing the bolter' contents into organic and norganic (Fig. 3)

Sup AS: Purious continues coloqueiss into sub-coloqueiss, defining
each material found in the bolance. (Fig. 4) Sup A4 Facord our data on a databast, then into Google Sheets to



Arknowledgments These you to commonly persons including Chy College of New York, Hadron liver liver. Fresh, heavy life, A., and Space Morean, Leaners, Debugs Refs. Observatory, The Proberton Freshcate and Strang Villams Loddenly, Network for four surface, woolship leader day, and franke, aggost. 78 are specially grandful for our network. Observations, the

Innerson Materials in Second Belones (Eig. 7)

being integrals and only 30 200-being organic (fig. 1)

Within the morganic pieces, we found 700-pieces of placts:
frequents, making up 50.000 of the total integrals: pieces.

(Fig.2)

Firstle fragment were the most prevalent by a cubenatial mangin, the second greatest was pallets at only 1475, (fig.2)

Bragments and policies also showed up most consistently. almost every bolts dissected contained one or the other. Dut of the organic materials, shells and bones were the tr categories with the greatest comber of talker. Suck and homes many not formed in the majority of bolices but appeared in great unconstrain a certain few

Conclusion + Discussion The results of our research has shown that there is a let more weds to be done in order to full property plants; pollution and make a cale space for the sourcoment we done with the galls: however materials come convexes succept galls. A gulleure unable to digest plastic this reduces the wolane in for it com who for food their can out and renows: executivities keringthen to die (Love, 2021) Every eingle goll bohn ve found hed pie oor of integrate photic fragment or pe lieu in them, but there we more maintaint trend in terms of organic material. This points out that even though all galls feed differently, plack is an inertable part of the it diet purely due to the diet amount of plack being forces, and the water or. the dash in the future, we would like to investigate further into the origin of the plants; in the venter, and major course of such politics. We would also the to take at article satisfical, not only the Hadron but also other bodies of venter where military commonly mode-4.

References Lone, T. (2021, Messathur 15), Physic 560; Node: Lone adv. and Ara-

il rikola, T (201, August 5) The effects of plants pollution on kogrejet.org/be-effects-of-plactic-p-ox-embits/c theyget the chance theywall fied, because they are opportunistic fieders they could accidentally ingest plastics and constimus even on purpose. This can have adverse effects on

What color of inorganic materials are seagulls most likely to ingest? The Pinkerton Foundation

By: Lizbeth Flores

Colors of increasic materials found in seasuil boluses

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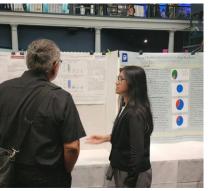
## **Gull Bolus Presentations: AMNH**











# **Evaluation Tools: Pre and Post Survey**

- In collaboration with the Lamont Doherty Earth Observatory and Science Research Mentoring Consortium (NYCSRMC), we devised a well-rounded, indepth pre and post-survey
  - Measured participants' interest and attitudes in pursuing STEM in future academic and professional settings
  - Evaluated interns' confidence in scientific skills including the utilization of lab equipment, conducting research, and presenting science topics to different audiences
  - Interns self-evaluated the development of a STEM identity and growth in confidence over the course of the six-week program

Mentors will share some of those survey results with you now!

