PEER REVIEWED ARTICLES OF CONSIDERATION:

1.<https://royalsocietypublishing.org/doi/10.1098/rsbl.2019.0405> - Sophonie

2.<https://royalsocietypublishing.org/doi/10.1098/rsos.191959> - Arianna

3.<https://faculty.sites.iastate.edu/cootjr/iowa-gull-research> - Bryan

4.<https://www.theguardian.com/science/2020/feb/26/gulls-observe-humans-to-home-in-on-tasty-scraps-study-finds> -Sydni

5.<https://www.frontiersin.org/articles/10.3389/fmars.2022.816881/full>. - Jade

**Article 1: Sophonie Germain (summary of article)**

“Herring gulls respond to human gaze direction” by Madeleine Goumas, Isabella Burns, Laura A. Kelley, and Neeltje J. Boogert.They wanted to know if gull feeding was influenced by human behaviors, things like gaze. Talks about how there is conflict between wildlife and a human-wildlife and it is the reason for the little success of conservation. They experiment on gulls to see their behaviors towards humans when resources are provided to them while humans are present. They conducted the hypothesis that Gulls behavior can change due to humane gaze and behaviors. The experiments was done by Targeting some of the gulls by placing food in front of them and wondered if their behavior would remain the same when eye contact was made with them versus when they were looking away. They experimented on74 gulls where they would pace the food and crouched a few inches away from the food while looking at the gulls. When the gulls approached they started a timer to see how long it would take for the gulls to approach. The Control group:The Herring gulls ( 74 - same species) and the humans tracking the behaviors of the gulls towards humans who did the trial of looking away and ones who did the trial of head movement and looking away. The Independent variable was The set a timer where if they approach or do not approach the food on the time limit of 300s, including human gaze. The dependent variable: The changes in the gulls' behavior in approaching and not approaching the food.

I don't believe that this experiment is that accurate because the gulls' behavior can sometimes not be because of the human or food in front of them. Some gulls can approach because they want the food or some can see but are not interested and continue their activities. In conclusion some of the data recorded may not be accurate.

My hypothesis: The changes of the herring gulls behavior towards humans are not truly because of human presence but instinct.

**Sophonie (Research design) part 5**

The type of research design I would conduct based on the hypothesis that the changes of the herring gulls behavior towards humans are not truly because of human presence but instinct is observation research design. For this research design it would be observation without intervention to clearly conclude that their behaviors are not based on human gaze toward them. Watching them in their natural setting is the best way to conclude this hypothesis. Block randomization is not needed for this experiment. I would casually watch their behaviors of what they do on their own, how they react to movement of random passersby. Whether they would remain in their normal activities or would they scurry away. This experiment would be conducted using a systematic time sampling. It can be a 30 min data collection in the morning 9am, another set of 30 in the afternoon 1pm, and another set in the evening 5pm. By repeating the procedure everyday during this exact set of time will help see whether the herring gulls' behaviors change throughout different times of the day or is it the same. This experiment will not have an interrupted time series designed because it’s an observation without intervention. I would record my database on their natural behaviors throughout the day without manipulation. Seeing what they actually do on their own is the base way to really understand whether their behaviors change toward humans because of human presence. If the herring gulls are being manipulated, their behavior might end up being because of their extinct that danger is presented.

**Sophonie part 6**

In order to conduct this experiment I would first need to get approval from an animal ethics review committee. For example the institutional animal care and use committee. Making sure animals are not harmed in the process of the research. I would also need approval from the Institutional Review Board (IRBs). They have the authority to approve or disapprove the research after reviewing if the research conducting will cause any problems or not. The observation of the herring gulls would be conducted at an open public beach. The experiment would not have any harm or pain on both the herring gulls and human passersby since it is an observation without intervention research design conducted on a non private setting. No consent is needed from human passersby because they are not being experimented on, and no harm is being done to the animals because they are being observed naturally.

Before publishing this research I would make sure to review everything carefully making sure there is no plagiarism. Cite every source properly and use quotations when taking ideas from another source. Once everything is reviewed and corrected this research may be published.

**Article 3: Bryan (summary)**

This research article is about the studies on the Iowa Gull species by Dr. Stephen J Dinsmore and with help from her avian ecology group from Iowa State University, more specifically focused on their movement patterns and survival in their habitats as well as gathering data of tagged gulls in Iowa. Iowa is in the middle west of the U.S. and is a hotspot for the gulls with an astonishing total of 21 different species. Two major residents of gulls are the Ring- billed Gull and the Franklin’s gull. Iowa gulls tend to lean more at bigger bodies of water, especially at the rivers of Mississippi and Missouri. In addition there's two locations that are popular for these birds. The Saylorville Reservoir in Polk County and the Red Rock Reservoir in Marlon County. The avian team had their methods of capturing these gulls like using bread, fries and fish as bait. Catching gulls has been a challenge for the folks at Iowa but they found that using bownets made capturing these birds the easiest. In order to collect the data on their movement and way of life the team used color bands and tracking devices. The model they used was the OrniTrack-15 4G. They attached each tracker using harnesses and they made sure beforehand that the trackers and harnesses won't cause a disturbance for the gull’s reproduction or survival. The trackers record up to 50 locations a day, they record altitude, speed and direction, and data is downloaded through cell towers. The results collectively come from more than 40 gulls that were tagged in Iowa. Majority being the Ring-billed Gulls, with a few Herrings and Glaucous gulls. The birds were shown to spread quite far from their original tagged location. The team predicted that these birds would migrate towards the Des Moines and Mississippi rivers, but instead the majority birds were found going more south from the center of Iowa. Unexpectedly some of the tagged gulls were around Saylorville and Red Rock in the late December of 2021.

This article was very interesting. I was surprised that the avian team were wrong in their assumption of where the gulls would initially go for migration. This just shows we have a lot more to learn from the different species of birds on our planet. One thing I couldn't help but to talk about which is considered a problem with the internal validity, was the fact that in order for the observers to get their data they needed to strap trackers and harnesses to the gulls. They had evidence that the technology didn’t hinder the gull’s survival or reproduction. But what if it affected other variables like how far the gulls would travel with the tracker weighing down on them.

Hypothesis: Gulls' food preference is linked to where they migrate to.

**Bryan (part 5)**

With my hypothesis being: Gulls' food preference is linked to where they migrate to. The appropriate research design would be to use an independent group design but more specifically it will be a natural groups design revolving around different baits. There will be 3 to 5 different baits that the observers are going to use to catch the gulls. All baits will be laid out separately, let's say one pile will have fries, another pile will be like 10 feet away and will have breadcrumbs, another pile will be like 10 feet away and will have chips, and another will have be 10 feet away also and have fish. Each pile will have a bownet ready to capture the gulls. We want to catch and tag at least 10 birds from each pile. Each bird depending on the bait they preferred when they were captured will have a different corresponding color tag. As Well as strapping a tracker on their backs. We will use the same tracker as the ones used in the article. After the tagging we will track the various distances the bird has traveled to. The only intervention involved will be the bait and tagging of each gull after the gulls are set free; there's no intervention in the tracking and data collecting process. There will be no use of block randomisation since the gulls will be choosing what group they will be a part of based on their initial food preference. All in all the whole experiment should take about a year until we have full results.

**Bryan (part 6)**

The majority of experiments involving animals must first get the approval of the animal ethics review committee which is necessary to check if there are any changes I have to make to ensure that my research design is at its best quality and no animals are endangered in my experiment. An example of a committee I would consider is the Institutional Animal Care and Use Committees (IACUCs). To make sure if there are any other problems with my research design I would try to get the approval from the Institutional Review Boards (IRBs), they will disapprove my request if there are any changes that have to be made in order for me to proceed with my experiments. The first part of my experiment requires the capturing and tracking of gulls, and so I will need a beach that has to be enclosed so there won't be people around that would interfere with the capturing process. And the tracking portion of my experiment can be done on my laptop. The tagging process won't harm the gulls as we just strapped a tracker on its back as a backpack and the harness won't deter gulls from flying. In the article by Dr. Stephan J Dinsmore, there was a citation of evidence that the harness is safe to use on gulls, “Thaxter et al. (2016) found no negative effects of the device or harness on gull survival or reproduction.” The tracker shouldn’;t have any effects on the data nor the life functions of the gulls. Since we will be observing animals there is no consent needed. Finally I would ensure that the critically reviewed research paper will have all its proper citations and no plagiarism is present for its publication.

**Article 5: Jade Myers (summary)**

The article ‘Habitat Selection and Specialisation of Herring Gulls During the Non-Breeding Season” hypothesizes that gulls change their habitats during non- breeding season. The independent variable being the breeding season and the dependent variable being the habitat. My main critique of this article is that there is no ‘Abstract’ but the layout of information was very informative. A research project done by van den Bosch in 2019 is referenced to show that spatial specialization is common within gulls during a non-breeding period and can be expressed as a home range area for the gulls who don’t move too far out after breeding. This is important because it helps solidify the researchers hypothesis on gull movement during the non-breeding season. The researcher in this article does not show signs of bias because they have very objective, non-opinionated statements. A shocking confound was that if different breeding populations used the same breeding, both populations get weaker connectivity and the habitat can become detrimental to the wider spatial scale. For this research, gulls were randomly selected through data from colonies founded in 2014-2015 in two regions along the west coast of the United Kingdom and in southwest Scotland. Experimenters doing research at a proximity where the birds could see them may have impacted the birds post-breed habitat selection because the birds know they are being watched. A hypothesis that can be built up upon this research is ‘flight patterns change when humans are present’ because of the possible deviation the rearcheds being present might have caused on the gulls.

**Jade Myers (Research Design) Part 5**

My hypothesis ‘flight patterns change when humans are present’ would be experimented on using observational research without humans being present to prevent tampering with the gulls being researched. There would be two groups of randomly selected gulls: one that can clearly see humans/ human objects that stick out in nature and one group that will be recorded by cameras disguised as plants, under rocks or things found in nature. Block randomization would be critical in this experiment so that the results can have as many common factors as possible. To balance practice effects, each condition of the experiment will be noted in order as often as possible. Interrupted time series will be needed to see how habitat migration changes in both breeding and non breeding season, but only for the research being done with human interference.This experiment will be conducted using systematic time sampling to ensure that there is a pattern during specific time periods not just generally throughout the day. An 8am sector of research, a 3pm sector of research and an 11pm sector of research.

**Jade Myers Part 6**

The first step to doing this research would be to obtain approval from the animals ethic review committee. The Institutional Review Board (IRB) would also need to be aware of my current research plan and how I intend to proceed going about it without harming the animals. Since the IRB has the power to approve or disapprove my research, it is imperative that my research meets the IRBs intended standards. Since gulls are mostly found on beaches, the research would be conducted on a public college campus with Beach access - like UMass Boston. The experiment would not harm the gulls or the environment because there will be no direct interactions with the gulls. People walking by would not need consent forms because they are not involved in the research and any animal that becomes a part of my study because gulls directly interact with them will not be tampered with either. Lastly, my research will be checked and any outside sources will be cited to avoid plagiarism. Once everything is reviewed and approved, my research will be published.

**Article 4: Sydni Souza (Summary)**

The article “Gulls observe humans to home in on tasty scraps, study finds” describes how Herring Gulls watch what and how humans eat to decide what their next meal will be. Researchers conducted how more hypothetically seagulls are to eat food that humans have touched. They found that seagulls have taken intimitations from how and what people eat which predict what food left on the ground they'll eat. A British researcher named Goumas who is in the field of seagull research, conducted that making eye contact with seagulls prevents them from grabbing food from you. She wanted to prove the point that seagulls use human intimidations to decide what they choose to eat, so she went to a seagull populated area wearing sunglasses so she did not make eye contact with the seagulls and pancakes she pretended to eat and another that she didn't touch at all. When she was finished pretending to eat one of the plates of pancakes she then left the area to see where the seagulls flew to first. The research conducted that 74% of the seagulls went to the plate she was pretending to eat first. She then replaced the pancakes with sponges and the same results occurred. This study found that we don’t throw away our food properly which led to seagulls creating a connection between us and food. These birds almost became domesticated and learned to live with humans.

I think this is a smart research design to figure out whether or not seagulls are just food hungry or if they are actually picking up what humans eat and do, using the sponges was a smart idea of proving the hypothesis. I do think she should've done a research design where she didn’t touch anything and to see if it was equally distributed or if they even touched the sponges.

My hypothesis would be whether or not seagulls could easily find their next meal if food was disposed of properly and they didn’t witness humans touching any food.

**Sydni Souza (Research Design)**

My research design would hypothesize that seagulls would have a harder time finding what to eat next if humans were to properly throw out their food. It would be a research design that would have to take place in a smaller town where individuals would dispose of their trash properly so seagulls couldn't become domesticated to humans and relying on them for food. I would use a repeated measures design to see over time how seagulls adapt to not having food thrown onto the streets or accessible in bins. There would be no intervention with the birds themselves, just the food. I would balance practice effects by choosing a group of seagulls to follow and to study and hypothesize how these seagulls hunt and what they choose to eat that isn’t left overs from humans. I would want to see how they adapt after a period of time after not feeding off of our scraps. This design would not have an interrupted time series and I would not be getting involved first hand with the seagulls I would just study their natural behaviors without any intervention. While studying the seagulls I would also hide my eyes same as what researcher Goumas did so it wouldn't deter any seagulls from hunting for certain foods.

**Sydni Souza (Part 6)**

Before conducting my research on Herring Gulls I need to get approved by the animal ethics review committee and the IRB to ensure that my research design is safe for the environment and animals of my choosing, though I am not touching or interfering with the seagulls I still need permission to research and study them I still need to meet requirements made by these committees to pursue my research. I would conduct my research in a smaller environment, maybe a Kelly's restaurant where there is a lot of food and a high population of seagulls. I would also get permission from the Kelly’s restaurant to conduct research there and come to an agreement to dispose of any food that seagulls could get too. The seagulls would not be interfered with directly, just their means of how they get food. These birds may experience hunger but I would hypothesize that the population of seagulls would decrease and a higher population beard beaches or the malls would occur. After I conduct my research I would check it for any plagiarism and have its correct citations before it’s reviewed and approved before my publication.

**Article 2: Arianna Curry (Part 4: Summary)**

The research article “Urban herring gulls use human behavioural cues to locate food” by [Madeleine Goumas](https://royalsocietypublishing.org/doi/10.1098/rsos.191959), [Neeltje J. Boogert](https://royalsocietypublishing.org/doi/10.1098/rsos.191959) and [Laura A. Kelley](https://royalsocietypublishing.org/doi/10.1098/rsos.191959) discusses the urban herring gulls and their eating habits in their environment that they happen to share with us. The authors start by highlighting an important difference between the herring gulls and other animals, they thrive in urban areas where there is a lot of discarded food (from humans, of course), whereas other animals are rather negatively impacted by the rapid growth of urbanization. With the increasing presence of our discarded food attracting more gulls and increasing interactions between us and them, the researchers note that there is still little known about the cognitive science behind the ‘urban gull’ behavior and their decisions when foraging for these leftovers. Their mission for this study was to investigate whether gulls are more attracted to anthropogenic (of, relating to, or resulting from the influence of human beings on nature) items when they have been physically handled by a human. They first took two food items, one human-handled the other not, and found that free-living gulls chose the human-handled food item. They further found that it was not the same for non-food objects, as the gulls did not react the same to whether the objects were human-handled or not. One critique I have is that the location of where they did this was not included and it would be interesting to know where they conducted this. The hypothesis is that the gulls prefer food that has been handled by humans. The control would be whether or not the items are human-handled. The dependent variable would be the seagulls eating the food handled by humans, and the independent variable is the humans improperly disposing food, which would happen whether or not the seagulls ate it. The seagulls eating it are dependent on the humans. My hypothesis for this would be that the seagulls decide what food to forage depending on how long it is human-handled.

**Arianna Curry (Part 5: Research design)**

Based on the hypothesis that I created based on my article, that the seagulls decide what food to forage depending on how long it is human-handled, I would need to conduct observational research to test this. In order to study and prove this hypothesis I would obviously need to observe the seagulls in their natural habitat, and what food they choose to forage and eat, depending on how long it is handled by humans. This is based on the researchers in the article’s findings that the gulls prefer food when it is human-handled. To record data and study for a comparison, I would need to time how long the food is handled by humans, before the seagulls eat it in order to test the hypothesis. This will mean it is observation with some intervention, as I would be intervening to change the amount of time that the food is human-handled. Block randomization would not be needed as I would just use whatever random population of seagulls I can find. Since I would be testing if they choose food handled by humans longer, I would have interrupted time-series design as I would need to record how they forage food before my interruption/intervention, compared to how they do after.

**Arianna Curry (Part 6)**

First thing I would need to do is create a formal proposal for my research outlining everything that would need to be known. Like everyone else’s research, I would also need to get approval from an animal ethics review committee as they would evaluate my quality and consistency of my proposal. My proposed use of animals, in this case seagulls, needs to be reviewed even if I am not in any way harming or even touching the animal. Since the animals can’t speak for themselves, someone has to. This is what this committee will do and help with. They would also let me know if there are any modifications to be made or protocols needing to be followed. Having this approval is necessary for the credibility and safety of my research. Then, I will also need approval from the Institutional Review Board as they are supposed to review and monitor the research. Things like the location where I will conduct research is important to be approved so I am able to use that space, even if it is public. The locations will most likely be beaches, and parking lots as that is where I'll find the most seagulls. Obviously I am not conducting research on humans so I do not have to worry about consent from people passing by as the research is conducted. Obviously everything has to be formally reviewed and clear of any plagiarism, before any publications of research could happen.