

GROUP 1 ANALYSIS

Note: You can **highlight** any interesting parts of the sections to make your answer clearer.

Students' names:
Richelle
Xinyuan
Saidah
Shiqian
Amos

Table 1

<p>1) Refer to Section 2:</p> <p>The noisy winged critters spend more than 99 percent of their 13 or 17 years as juveniles, sucking on roots in underground lairs. In the summertime, they crawl out en masse — up to 40,000 can emerge from under a single tree within days. Their subterranean tenures are intriguing not only because 13 and 17 years are long periods over which to remain synchronized, but also because both numbers are prime — divisible only by themselves and the number 1.</p>	
<p>What role does Section 2 play?</p>	<p>provides an introduction + background information on cicadas, gives context -> makes it easier for the readers to understand why their life cycles are so unique/strange (deontological appeal -> innate value of the research?)</p>
<p>Can you find this in the research article? Why is it necessary for the news author to include this information?</p>	<p>it is not found in the research article (not in depth, not as much details) it is necessary because non-specialists do not have such basic information about cicadas (their behaviours, life cycles) and this information is needed for them to understand the basis/reasoning behind the research</p>
<p>2) Refer to Section 3:</p> <p>"Their life cycles have been suspicious since the beginning," said John Cooley, who collaborated on the research with researchers in Japan. "It's a surprising and unique combination of a long life cycle and mass emergence. And on top of that, why do they have to be prime? [This study] ties that all together."</p>	
<p>Why does the news author quote one of the co-authors of the research article?</p>	<p>This quote introduced to readers the myths and problems with the life cycles. Like a rhetorical question, it attracts readers to continue reading to find out more, especially why the life cycles "have to be prime".</p> <p>quoting the co-authors also provides more legitimacy /credibility/ reliability as these are the actual researchers who worked on this</p> <p>the quote includes the <u>thought process</u> of the researchers behind why they started this research to begin with, giving us the impression that there IS indded curiosity/mystery and meaning to this research topic</p>



Move 3:
Background
Move 4:
Rationale
Move 5:
Source



Required Reading

Buchen, L. (2009, May 18). Cicadas primed for defense. Wired.
<http://www.wired.com/2009/05/primecicadas/>

Background Reading

Tanaka, Y., Yoshimura, J., Simon, C., Cooley, J. R., & Tainaka, K. I. (2009). Allee effect in the selection for prime-numbered cycles in periodical cicadas. Proceedings of the National Academy of Sciences, 106(22), 8975-8979.
<http://www.pnas.org/content/106/22/8975.full.pdf>

Table 1

MOVES	PARAPHRASE/QUOTES FROM ARTICLE
<p>Move 1 Introduce the key finding</p>	<p>Japanese researchers have developed a model that may explain the animals' (cicadas) mysteriously accurate biological clocks.</p>
<p>Move 2 Describe the significance of the result</p>	<p>Section 10 "to help understand the problem cicadas have when they get to a low population density" first explicit mathematical treatment of this problem</p>

Required Reading
Buchen, L. (2009, May 18). Cicadas primed for defense. Wired.
<http://www.wired.com/2009/05/primecicadas/>

Background Reading
Tanaka, Y., Yoshimura, J., Simon, C., Cooley, J. R., & Tainaka, K. I. (2009). Allee effect in the selection for prime-numbered cycles in periodical cicadas. *Proceedings of the National Academy of Sciences*, 106(22), 8975-8979.
<http://www.pnas.org/content/106/22/8975.full.pdf>

GROUP 3 ANALYSIS

Note: You can highlight any interesting parts of the sections to make your answer clearer.

Students' names:

Tei Kar
Deon
Yu Xian
Jia wei



Table 1

<p>3) Refer to Section 4:</p> <p>A leading theory is that long, prime-numbered life cycles minimize the likelihood that the 13-year broods and 17-year broods will ever mate. If the animals lived smaller prime-numbered lives, like 5 and 7, they'd synch up every 35 years; if their lifespans were large, non-prime numbers, like 12 and 16 years, they might inadvertently mate every 48 years. But the large prime numbers 13 and 17 only match up every 221 years.</p>	
<p>What role does the introduction of this leading theory serve?</p>	<p>Glve readers an interesting fact about the lifespan of cicadas</p> <p>Give readers something to compare (5,7 & 12,16) so they will understand why 13 and 17 ensures the long lifespan of cicadas (since the product of 13 and 17 is the largest.</p> <p>Move 4: Rationale (reason the for doing the research)</p>
<p>Contrast this to the rationale given in the CRISPR news article.</p>	<p>The rationale given in the CRISPR article serves mainly to introduce a breakthrough, but the leading theory serves to introduce interesting facts about cicadas' lifespan to the reader.</p> <p><u>Rationale</u></p> <p>a) overcoming current limitations</p> <p>b) addressing a research gap (a gap in the literature = the current studies done in the field)</p>
<p>4) Refer to Sections 6 & 8-11:</p> <p>This is a problem, Cooley said, because periodical cicadas find strength in numbers. They're easy to catch and don't bite or sting, so they easily become snacks for hungry predators. But by buzzing around with hundreds of thousands of other cicadas, the probability of any one being eaten is close to zero.</p> <p>...</p> <p>Mathemetician Glenn Webb of Vanderbilt University says the explanation is reasonable, but that there are other alternatives. "Our hypothesis is that cicada emergences minimize overlap with the periodic cycles of their predators, like birds and small animals, which are 2 to 5 years," he said. "By choosing prime number, through evolution, cicadas avoid meshing with these shorter cycles."</p> <p>Webb also mentioned another hypothesis: that the prime numbers are coincidental, and not significant at all. Cooley acknowledges the model made a number of assumptions, as the difficulty of studying cicadas leaves many mysteries around their biology and evolution. For example, it isn't known whether hybridization actually produces offspring with intermediate lifecycles. And currently, the 13-year and 17-year broods' habitats do not overlap, so they don't have a chance to interbreed in present day — though their distribution has likely changed since they first diverged.</p> <p>"This explores the plausibility of this idea, to help understand the problem cicadas have when they get to a low population density," said Cooley. "This is the first explicit mathematical treatment of this problem."</p>	
<p>How are these direct quotes different from the citation format in academic essays? Why the difference?</p>	<p>Direct quotes integrate the points/explanation of the information into the paragraph better than citation format as otherwise the reader might have to refer to a long list of citations in the bibliography</p>
<p>Are direct quotes necessary? How does the author get these quotes?</p>	

GROUP 1 ANALYSIS:
Q5. explanatory strategies

Table 1

From the research article (Tanaka, et al., 2009)	From the news article (Buchen, 2009)
In Magicicada , the fitness costs of hybridization may be elevated by predation; periodical cicadas suffer heavy mortality at low population densities because they rely on mass numbers and a strategy of “ predator satiation ” for survival (9, 10). (p.8975)	This is a problem, Cooley said, because periodical cicadas find strength in numbers. They’re easy to catch and don’t bite or sting, so they easily become snacks for hungry predators. But by buzzing around with hundreds of thousands of other cicadas, the probability of any one being eaten is close to zero. (Section 6)

Table 1

Examples	Strategy
magicicada -> periodical cicadas	Magicicada is the genus (scientific name) Periodical cicada refers to any of the 7 species of the Magicida genus <ul style="list-style-type: none">the use of “periodical” is to allude the prime number life cycles of cicadas Tutor’s note: elude = to run away from/ to hide from allude to = to imply/ to refer to
predator satiation -> easy to catch... probability of being eaten is close to zero.	example? exemplification

GROUP 1 ANALYSIS:
Q6. cohesive devices

New table

Sections 1 - 2 (Buchen, 2009)
Instructions: Find 2 kinds of <u>cohesive devices</u> . Highlight #1 in blue and #2 in red.
The periodical cicada is one of the world’s longest-living insects , but nobody knows why it times its death with bizarre precision : It either lives for 13 years or 17 years, on the dot . Now, Japanese researchers have developed a model that may explain the animals’ mysteriously accurate biological clocks. The noisy winged critters spend more than 99 percent of their 13 or 17 years as juveniles, sucking on roots in underground lairs. In the summertime, they crawl out en masse — up to 40,000 can emerge from under a single tree within days. Their subterranean tenures are intriguing not only because 13 and 17 years are long periods over which to remain synchronized , but also because both numbers are prime — divisible only by themselves and the number 1.

Table 1

Cohesive Device	What does it refer to? How does it ensure cohesion?
#1: _____Emphasis_____	
#2: _____Substitution_____	different names referring to the same thing, less repetitive/boring
Bonus: What is the difference between coherence and cohesion? coherence is to make it easier to read/ensure flow while cohesion is the subset of coherence where we enabling the linking of ideas so we can have cohesion without coherence but cannot have coherence without cohesion	

Explanatory strategies

Non-technical terms
Exemplification (=using examples)

Cohesive devices

synonyms
pronouns
demonstrative pronouns
transition words

Look at Groups 2 and 4 for the Bonus question.

GROUP 2 ANALYSIS:
Q5. explanatory strategies

Table 1

From the research article (Tanaka, et al., 2009)	From the news article (Buchen, 2009)
In Magicicada , the fitness costs of hybridization may be elevated by predation; periodical cicadas suffer heavy mortality at low population densities because they rely on mass numbers and a strategy of “ predator satiation ” for survival (9, 10). (p.8975)	This is a problem, Cooley said, because periodical cicadas find strength in numbers. They’re easy to catch and don’t bite or sting, so they easily become snacks for hungry predators. But by buzzing around with hundreds of thousands of other cicadas, the probability of any one being eaten is close to zero. (Section 6)

Table 1

Examples	Strategy
magicicada -> periodical cicadas	Simplification Scientific name --> Common name
predator satiation -> easy to catch... probability of being eaten is close to zero.	elaboration break down into simple terms

GROUP 2 ANALYSIS:
Q6. cohesive devices

New Table

Sections 1 - 2 (Buchen, 2009)
Instructions: Find 2 kinds of <u>cohesive devices</u> . Highlight #1 in blue and #2 in red.
<p>The periodical cicada is one of the world’s longest-living insects, but nobody knows why it times its death with bizarre precision: It either lives for 13 years or 17 years, on the dot. Now, Japanese researchers have developed a model that may explain the animals’ mysteriously accurate biological clocks.</p> <p>The noisy winged critters spend more than 99 percent of their 13 or 17 years as juveniles, sucking on roots in underground lairs. In the summertime, they crawl out en masse — up to 40,000 can emerge from under a single tree within days. Their subterranean tenures are intriguing not only because 13 and 17 years are long periods over which to remain synchronized, but also because both numbers are prime — divisible only by themselves and the number 1.</p>

Table 1

Cohesive Device	What does it refer to? How does it ensure cohesion?
#1: Synonyms	"periodical cicada", "insects", "animals", "noisy winged critters" These are different names which all refer to the cicada. The use of different substitution of names reduce repetition.
#2: Pronouns	"they", "their" Refers to the subject in the topic sentence.
Bonus: What is the difference between coherence and cohesion? Coherence --> Ensure logical flow, consistency and understandability Cohesion --> Ensure ideas can be connected/linked together	



GROUP 3 ANALYSIS:
Q5. explanatory strategies

Table 1

From the research article (Tanaka, et al., 2009)	From the news article (Buchen, 2009)
In Magicicada , the fitness costs of hybridization may be elevated by predation; periodical cicadas suffer heavy mortality at low population densities because they rely on mass numbers and a strategy of “ predator satiation ” for survival (9, 10). (p.8975)	This is a problem, Cooley said, because periodical cicadas find strength in numbers. They're easy to catch and don't bite or sting, so they easily become snacks for hungry predators. But by buzzing around with hundreds of thousands of other cicadas, the probability of any one being eaten is close to zero. (Section 6)

Table 1

Examples	Strategy
magicicada -> periodical cicadas	transforming a technical term which can only be understood by specialists into something that can be easily understood by the layman -> using non-technical terms
predator satiation -> easy to catch... probability of being eaten is close to zero.	Exemplification: giving a specific example of the benefits of cicadas grouping together in order to avoid being eaten, as opposed to just saying "they find strength in numbers"



GROUP 3 ANALYSIS:
Q6. cohesive devices

New table

Sections 4 - 6 (Buchen, 2009)
Instructions: Find 2 kinds of <u>cohesive devices</u> . Highlight #1 in blue and #2 in red.
A leading theory is that long, prime-numbered life cycles minimize the likelihood that the 13-year broods and 17-year broods will ever mate. If the animals lived smaller prime-numbered lives, like 5 and 7, they'd synch up every 35 years; if their lifespans were large, non-prime numbers, like 12 and 16 years, they might inadvertently mate every 48 years. But the large prime numbers 13 and 17 only match up every 221 years.
Though this theory is mathematically sound , no one could say why the animals would need to minimize hybridization, so Jin Yoshimura at Shizuoka University developed a mathematical model to explore the rationale. He thought if 13-year and 17-year broods interbred, they might produce offspring with intermediate lifecycles — for example 15 years. This would result in their emergence two years before or after the vast majority of their fellow cicadas.
This is a problem , Cooley said, because periodical cicadas find strength in numbers. They're easy to catch and don't bite or sting, so they easily become snacks for hungry predators. But by buzzing around with hundreds of thousands of other cicadas, the probability of any one being eaten is close to zero.

Table 1

Cohesive Device	What does it refer to? How does it ensure cohesion?
#1: Transition words (contrast/emphasis...)	Referring to the idea that long, prime-numbered life cycles minimize the likelihood that the 13-year broods and 17-year broods will ever mate. Because in the next line the reader mentioned that no one understood why this math theory is needed with gives a contrasting effect
#2: Demonstrative pronouns (this/that) -> to refer to complex concepts that were explained beforehand	It refers to the idea of cicadas having intermediate cycles. The author brings up the concern, explaining why cicadas need to have lifespans of 13 , 17 years to ensure their survival.
Bonus: What is the difference between coherence and cohesion? Coherence is how good the audience understands you but cohesion is how good your audience is able to follow you	



GROUP 4 ANALYSIS:
Q5. explanatory strategies

Table 1

From the research article (Tanaka, et al., 2009)	From the news article (Buchen, 2009)
In Magicicada , the fitness costs of hybridization may be elevated by predation; periodical cicadas suffer heavy mortality at low population densities because they rely on mass numbers and a strategy of "predator satiation" for survival (9, 10). (p.8975)	This is a problem, Cooley said, because periodical cicadas find strength in numbers. They're easy to catch and don't bite or sting, so they easily become snacks for hungry predators. But by buzzing around with hundreds of thousands of other cicadas, the probability of any one being eaten is close to zero. (Section 6)

Table 1


Examples	Strategy
magicicada -> periodical cicadas	non-technical words replaced the initial "magic" in "magicicada" to "periodical"
predator satiation -> easy to catch... probability of being eaten is close to zero.	exemplification

GROUP 4 ANALYSIS:
Q6. cohesive devices

New table

Sections 4 - 6 (Buchen, 2009)
Instructions: Find 2 kinds of <u>cohesive devices</u> . Highlight #1 in blue and #2 in red.
A leading theory is that long, prime-numbered life cycles minimize the likelihood that the 13-year broods and 17-year broods will ever mate. If the animals lived smaller prime-numbered lives, like 5 and 7, they'd synch up every 35 years; if their lifespans were large, non-prime numbers, like 12 and 16 years, they might inadvertently mate every 48 years. But the large prime numbers 13 and 17 only match up every 221 years.
Though this theory is mathematically sound, no one could say why the animals would need to minimize hybridization, so Jin Yoshimura at Shizuoka University developed a mathematical model to explore the rationale. He thought if 13-year and 17-year broods interbred, they might produce offspring with intermediate lifecycles — for example 15 years. This would result in their emergence two years before or after the vast majority of their fellow cicadas.
This is a problem, Cooley said, because periodical cicadas find strength in numbers. They're easy to catch and don't bite or sting, so they easily become snacks for hungry predators. But by buzzing around with hundreds of thousands of other cicadas, the probability of any one being eaten is close to zero.

Table 1

Cohesive Device	What does it refer to? How does it ensure cohesion?
#1: Signposts 	Shows relationship between the paragraphs or sentences e.g. "But", "This would result"
#2: transitions	
Bonus: What is the difference between coherence and cohesion? coherence is to be clear while cohesion is to make sure ideas flow smoothly	
can you have one without the other?	Yes. Ideas can make sense but if it's out of place it won't flow correctly so it won't be cohesive. For example, if we switched the first and last paragraphs, the ideas would make sense but since the sequence is incorrect, the reader would be confused because there is no proper flow.

ADDING and as well as moreover furthermore in addition too on top of that another point is	SEQUENCING first, firstly, first of all second, secondly.. third next meanwhile now subsequently	ILLUSTRATING for example such as for instance in the case of as shown by illustrated by take... one example is..
COMPARING similarly likewise as with like equally in the same way	QUALIFYING but however although unless except apart from as long as if	CONTRASTING whereas alternatively unlike on the other hand conversely having said that nevertheless however



GROUP 1 ANALYSIS:
evaluative language
and appeals

Table 1

7) What kind of appeal does the news author use?	
Deontological or teleological? Evidence	deontological "Their life cycles have been suspicious since the beginning," said John Cooley, who collaborated on the research with researchers in Japan. "It's a surprising and unique combination of a long life cycle and mass emergence. And on top of that, why do they have to be prime? [This study] ties that all together."
Evaluation of effectiveness	does not <u>apply</u> to most readers, not relatable, no ethical obligation to follow along with this discovery or care about it -> teleological appeal



GROUP 1 ANALYSIS:
effectiveness of
explanatory strategies

d) Exemplification

Example 1

A group of researchers from the National University of Singapore thus postulated that blue light, specifically from an LED bulb – **which is the light in your smartphone or computer screen**, could kill bacteria in raw food products.

Effective? Why or why not?

Not effective. The example should be placed just after "blue light" rather than "LED bulb". It would cause confusion or misunderstanding towards blue light

however, still effective because smartphones and computers are everyday items that most people own so its more relatable

Example 2

This is much like what we would expect **one of those holograms from the Star Wars films** to look like, a 3D image in the air created by light coming from a flat surface, except that this 3D image is invisible and created by sound, not light.

Effective? Why or why not?

ineffective because there are people who have not watched Star Wars before and would be unable to relate

too specific of an example, should refer to something that the general audience can understand

**GROUP 2 ANALYSIS:
evaluative language
and appeals**

Table 1

7) What kind of appeal does the news author use?	
Deontological or teleological? Evidence	Deontological appeal. Refer to section 2 ^^^ "The periodical cicada is one of the world's longest-living insects, but nobody knows why it times its death with bizarre precision: It either lives for 13 years or 17 years, on the dot" #funfactfriday kinda article
Evaluation of effectiveness	Effective. Multiple layers of curiosity was brought out --> Precision of life span and the life span following prime numbers The writer draws a link between 2 seemingly unrelated concepts, prime number and lifespan, which is interesting as readers will be intrigued to find out more about the association.



**GROUP 2 ANALYSIS:
effectiveness of
explanatory strategies**

d) Exemplification

Example 1

A group of researchers from the National University of Singapore thus postulated that blue light, specifically from an LED bulb - *which is the light in your smartphone or computer screen*, could kill bacteria in raw food products.

Effective? Why or why not?
yes as it is very relatable as everyone owns a smartphone or computer

poor placement of example --> the example is given after 'LED bulb' -- is the example talking about blue light or the LED bulb?

the example can be more specific --> what kind of light (and from where) that is emitting from the smartphone/computer screen?



Example 2

This is much like what we would expect *one of those holograms from the Star Wars films* to look like, a 3D image in the air created by light coming from a flat surface, except that this 3D image is invisible and created by sound, not light.

no, as not everyone watches star wars, hence it is not very effective



GROUP 3 ANALYSIS:
evaluative language
and appeals

Table 1

8) Refer to Section 1:	
The periodical cicada is one of the world's longest-living insects, but <u>nobody knows</u> why it times its death with bizarre precision: It either lives for 13 years or 17 years, on the dot. Now, Japanese researchers have developed a model that <u>may explain</u> the animals' mysteriously accurate biological clocks.	
Highlight use of hedging. Why doesn't the author use more certain language?	<p>Nobody is very sure if the model could accurately explain the phenomenon. Hence the hedging is use since the author did not want to mislead the readers.</p> <p>There could also be an alternative hypothesis to explain why the biological clocks are so accurate that could be more correct than the model.</p> <p>-> acknowledging limitations -> opening avenues for future research</p>



GROUP 3 ANALYSIS:
effectiveness of
explanatory strategies

c) Non-technical terms

Example 1

The researchers monitored the composition of air leaving the cinema through sensors attached to the ceiling vents.
(A spectrometer = sensors attached to the ceiling vents)

Effective? Why or why not?
effective, it describes the function of a spectrometer as well as what it detects



Example 2

When our organs receive this oxygen, they can then be 'powered' to function.

Not effective. It has lost its purpose behind the use of oxygen; losing its accuracy.

**GROUP 4 ANALYSIS:
evaluative language
and appeals**

Table 1

9) Refer to the last section: "This explores the plausibility of this idea, to help understand the problem cicadas have when they get to a low population density," said Cooley. "This is the first explicit mathematical treatment of this problem."	
What is its role and significance?	Role: Introduce the <u>possibilities</u> that the result can have. Introduce a possible <u>breakthrough</u> : "first" Evaluative language: possibility/ importance
Highlight the language used to emphasise this role.	



**GROUP 4 ANALYSIS:
effectiveness of
explanatory strategies**

c) Non-technical terms

Example 1

The researchers monitored the composition of air leaving the cinema through **sensors attached to the ceiling vents**.
 (A spectrometer = sensors attached to the ceiling vents)

Effective? Why or why not?

Not effective, doesn't help someone understand how a spectrometer works because it's inaccurate (not a exactly a sensor and not always attached to ceiling vents)



Example 2

When our organs receive this oxygen, they can then be **'powered'** to function.

Effective? Why or why not?

**Yes, it is effective. It describes the role of oxygen (in essence).
 -> references electricity (oxygen --> electricity)**



GROUP 4 ANALYSIS

Note: You can highlight any interesting parts of the sections to make your answer clearer.

Students' names:
Meng Han
Adinda
Francis
Kailin

Table 1

3) Refer to Section 4: A leading theory is that long, prime-numbered life cycles minimize the likelihood that the 13-year broods and 17-year broods will ever mate. If the animals lived smaller prime-numbered lives, like 5 and 7, they'd synch up every 35 years; if their lifespans were large, non-prime numbers, like 12 and 16 years, they might inadvertently mate every 48 years. But the large prime numbers 13 and 17 only match up every 221 years.	
What role does the introduction of this leading theory serve?	
Contrast this to the rationale given in the CRISPR news article.	
4) Refer to Sections 6 & 8-11: This is a problem, Cooley said, because periodical cicadas find strength in numbers. They're easy to catch and don't bite or sting, so they easily become snacks for hungry predators. But by buzzing around with hundreds of thousands of other cicadas, the probability of any one being eaten is close to zero. ... Mathematician Glenn Webb of Vanderbilt University says the explanation is reasonable, but that there are other alternatives. "Our hypothesis is that cicada emergences minimize overlap with the periodic cycles of their predators, like birds and small animals, which are 2 to 5 years," he said. "By choosing prime number, through evolution, cicadas avoid meshing with these shorter cycles." Webb also mentioned another hypothesis: that the prime numbers are coincidental, and not significant at all. Cooley acknowledges the model made a number of assumptions, as the difficulty of studying cicadas leaves many mysteries around their biology and evolution. For example, it isn't known whether hybridization actually produces offspring with intermediate lifecycles. And currently, the 13-year and 17-year broods' habitats do not overlap, so they don't have a chance to interbreed in present day — though their distribution has likely changed since they first diverged. "This explores the plausibility of this idea, to help understand the problem cicadas have when they get to a low population density," said Cooley. "This is the first explicit mathematical treatment of this problem."	
How are these direct quotes different from the citation format in academic essays? Why the difference?	1) No in text citation, just namedrop the author and credentials (e.g. job/specialty; institute; accolades...) verbs used are different; article has a more conversational tone: -News article - "Mathematician Glenn Webb of Vanderbilt University says....." -Academic essays - " Webb (2009) stated/ Webb (2009) concluded" Move 5: Source 2) No reference page Why the difference: The news article uses words like "said" to make the statement that they're trying to cite sound more personable/ conversational tone. Makes it seem like the author is talking directly to the reader.
Are direct quotes necessary? How does the author get these quotes?	1) Credibility; accuracy of findings 2) From the research article The direct quotes were likely obtained from an interview with the researcher. We think that they are not necessary as there are also secondary sources such as past interviews with the researcher that has been recorded and uploaded online, and perhaps secondary scientific news articles, which can be found on websites such as wired. "Researchers told wired" etc etc



Periodical cicadas are well known for their prime-numbered life cycles (17 and 13 years) and their mass periodical emergences. The origin and persistence of prime-numbered cycles are explained by the hybridization hypothesis on the basis of their lower likelihood of hybridization with other cycles. Recently, we showed by using an integer-based numerical model that prime-numbered cycles are indeed selected for among 13- to 29-year cycles. Here, we develop a real-number-based model to investigate the factors affecting the selection of prime-numbered cycles. We include an Allee effect in our model, such that a critical population size is set as an extinction threshold. We compare the real-number models with and without the Allee effect. The results show that in the presence of an Allee effect, prime-numbered life cycles are most likely to persist and to be selected under a wide range of extinction thresholds.

GROUP 2 ANALYSIS

Note: You can **highlight** any interesting parts of the sections to make your answer clearer.

Students' names:

Min Jet

Ben

Ryan

Bo Cong

Fang Yu



Abstract

1) Refer to Section 2:

The noisy winged critters spend more than 99 percent of their 13 or 17 years as juveniles, sucking on roots in underground lairs. In the summertime, they crawl out en masse — up to 40,000 can emerge from under a single tree within days. Their subterranean tenures are intriguing not only because 13 and 17 years are long periods over which to remain synchronized, but also because both numbers are prime — divisible only by themselves and the number 1.

What role does Section 2 play?

To create a sense of mystery and to get the readers thinking as to why their life cycle is so bizarre. - deontological appeal

Also to set the **background** and context of the article.

Move 3: Background

Can you find this in the research article? Why is it necessary for the news author to include this information?

It was briefly mentioned in the abstract of the research article but the author expanded on this information with easy to understand terms. In the abstract, it was mentioned that the critters are known for their 'mass periodical emergence'. While in news, the author painted a clearer picture of how they emerged and the abundance.

Different target audiences: specialised or non-specialised

2) Refer to Section 3:

"Their life cycles have been suspicious since the beginning," said John Cooley, who collaborated on the research with researchers in Japan. "It's a surprising and unique combination of a long life cycle and mass emergence. And on top of that, why do they have to be prime? [This study] ties that all together."

Why does the news author quote one of the co-authors of the research article?

it helps adds on to the mystery

Directly quoting the co-authors of the research article allows us to gain insight into their thought process, and how they approach the problem.

Required Reading

Buchen, L. (2009, May 18). Cicadas primed for defense. Wired.

<http://www.wired.com/2009/05/primecicadas/>

Background Reading

Tanaka, Y., Yoshimura, J., Simon, C., Cooley, J. R., & Tainaka, K. I. (2009). Allee effect in the selection for prime-numbered cycles in periodical cicadas. Proceedings of the National Academy of Sciences, 106(22), 8975-8979.

<http://www.pnas.org/content/106/22/8975.full.pdf>