

As Gilbert White, Darwin, and others observed long ago, all species appear to have the innate capacity to increase their numbers from generation to generation. The **task** for ecologists is to untangle the environmental and biological factors that hold this intrinsic capacity for population growth in check over the long run. The great variety of dynamic behaviors exhibited by different populations makes this task more difficult: some populations remain roughly constant from year to year; others exhibit regular cycles of abundance and scarcity; still others vary wildly, with outbreaks and crashes that are in some cases plainly correlated with the weather, and in other cases not.

Comment [M1]: **Background**

Comment [M2]: **Foreshadowing: problem:** different population dynamics make it hard to answer the question => Thesis type : solution to the problem

To impose some order on this kaleidoscope of patterns, one school of thought proposes dividing populations **into two groups**. These ecologists posit that the **relatively steady populations** have "**density-dependent**" growth parameters; that is, rates of birth, death, and migration which depend strongly on **population density**. The highly **varying** populations have "**density-independent**" growth parameters, with vital rates buffeted by environmental events; these rates fluctuate in a way that is wholly **independent of population density**.

Comment [M3]: solution for the problem

Comment [M4]: **Development: categorizing:** Note taking GUIDE

This dichotomy has its uses, but it can cause problems if taken too literally. For one thing, no population can be driven entirely by density-independent factors all the time. **No matter how severely or unpredictably** birth, death and migration rates may be fluctuating around their long-term averages, if there were **no density-dependent** effects, the population would, in the long run, **either increase or decrease without bound** (barring a miracle by which gains and losses canceled exactly). Put another way, it may be that on average 99 percent of all deaths in a population arise from density-independent causes, and only one percent from factors varying with density. The factors making up the one percent may seem unimportant, and their cause may be correspondingly hard to determine. Yet, whether recognized or not, they will usually determine the **long-term average population density**.

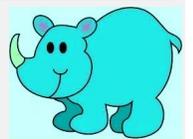
Comment [M5]: The problem of the solution
NO dens dep => NO bound on pop

Comment [M6]: **Development : cause-effect :** Note taking GUIDE

Comment [M7]: Paragraph thesis: dep fatct : imp for ave

In order to understand the nature of the ecologist's investigation, we may think of the density-dependent effects on growth parameters as the "**signal**" ecologists are trying to isolate and interpret, one that tends to make the population increase from relatively low values or decrease from relatively high ones, while the density-independent effects act to produce "**noise**" in the population dynamics. For

Comment [M8]:
THESIS: The author solution : signal and noise theory
Develpoment : comparison and contrast



populations that remain relatively constant, or that oscillate around repeated cycles, the signal can be fairly easily characterized and its effects described, even though the causative biological mechanism may remain unknown. For irregularly fluctuating populations, we are likely to have too few observations to have any hope of extracting the signal from the overwhelming noise. But it now seems clear that all populations are regulated by a mixture of density-dependent and density-independent effects in varying proportions. ~

Comment [M9]: supports

Comment [M10]: Result

NOTES:

1: problems find imp factrs

2: firt soltn steady : density
varying not density ::: env

3: prob : not expln long run average => :densy
impt

4: AUTHOR THESIS : density is signal and others
are just noises=> both impt



17. The **author** of the passage is **primarily concerned with**

(A) **discussing** two categories of factors that control population growth and assessing their **relative** importance

(B) describing **how** growth rates in natural populations fluctuate over time and explaining **why** these changes occur

(C) proposing a hypothesis concerning population sizes and suggesting ways to **test** it

(D) posing a fundamental question about **environmental factors** in population growth and presenting some currently accepted answers

(E) **refuting** a commonly accepted theory about population density and offering a new alternative

Comment [M11]:

سوال مین ایندیا (اسکورینگ)

Comment [M12]:

این گزینه هر 4 پاراگراف رو پوشش داده و امتیاز 5 رو می گیره

Comment [M13]: چگونگی نوسان رو فقط در پاراگراف اول و دوم گفته و دلایل اون هم محدود به پاراگراف دوم میشه پس امتیاز 2 رو می گیره

Comment [M14]: راهی برای تست پیشنهاد نداده

Comment [M15]: سوالش در مورد عوامل محیطی نبوده بلکه در باره علت کنترل رشد جمعیت بوده

Comment [M16]: نظریه بازگو شده رو رد نکرده، بلکه گفته باید گسترده تر تفسیر بشه

18. **It** can be **inferred** from the passage that the author considers the **dichotomy** discussed in the second paragraph to be

(A) applicable only to **erratically fluctuating** populations

(B) useful, but only if its **limitations** are recognized

(C) **dangerously misleading** in most circumstances

(D) a **complete and sufficient** way to account for observed phenomena

(E) conceptually valid, but **too confusing** to apply on a practical basis

Comment [M17]:

اولا سوال اینفرنس بوده و پاسخ مستقیما در پسچ نیامده است. دوما کلوی سوال لغت دایکاتومی به معنای دوگانگی و دو پارگی در پاراگراف دوم بوده که باید به اونجا رجوع بدیم گزینه ها رو.

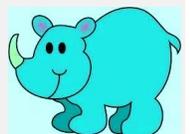
Comment [M18]: در پاراگراف اصلا دلیلی مبنی بر اینکه دوگانگی تنها برای جمعیت های نوسان کننده کاربرد دارد، وجود نداره. پس این گزینه غلطه

Comment [M19]: دقیقا لغت لیمیتیشن دلالت بر اینکه داره که باید این دایکاتومی گسترده تفسیر بشه و با محتوای تاپیک سنتنس پاراگراف دوم تطابق داره و میتونه این گزینه صحیح باشه

Comment [M20]: خیلی تند بوده و خارج از محدوده پسچ است

Comment [M21]: با تاکید پسچ بر در نظر نگرفتن دایکاتومی به صورت طوطی وار و تفسیر گسترده اون تطابق نداره.

Comment [M22]: باز لغت بسیار گیج کننده تند بوده و گزینه رو نسبت به گزینه دوم غلط می کنه. اگر چه باید دایکاتومی رو گسترده تر تفسیر کنیم اما به هر حال بسیار گیج کننده هم نیست. پس همون گزینه دوم صحیح است.



19. Which of the following statements can be **inferred** from the **last paragraph**?

(A) For irregularly fluctuating populations, **doubling** the number of observations made will probably result in the isolation of density-dependent effects.

Comment [M23]: اگر چه محدود بودن مشاهدات به عنوان یک مشکل ذکر شده ولی الزاما دوبرابر کردن اون نمی تونه این مشکل رو حل کنه، این گزینه غلطه

(B) Density-dependent effects on population dynamics do not occur **as frequently as** do density-independent effects.

Comment [M24]: در پاراگراف آخر حداقل اشاره ای به مقایسه فراوانی دو فاکتور نشده

(C) At present, ecologists do not understand **any** of the underlying causes of the density-dependent effects they observe in population dynamics.

Comment [M25]: این لغت گزینه رو غلط کرده و اگرچه پیدا کردن این دلایل سخت توصیف شده اما این که هیچ کدامش قابل فهم نیست هم زیادی تنده و غلط

(D) Density-dependent effects on growth parameters are thought to be caused by some sort of **biochemical "signaling"** that ecologists hope eventually to understand.

Comment [M26]: اصلا سیگنال های زیست شیمیایی موضوع پاراگراف نیست.

(E) **It** is sometimes possible to infer the existence of a density-dependent factor controlling population growth without understanding its causative mechanism.

Comment [M27]:
این گزینه دقیقا در پسج ذکر شده **the signal can be fairly easily characterized and its effects described, even though the causative biological mechanism may remain unknown** به این صورت که عوامل وابسته به چگالی قابل ردیابی هستند در حالیکه که مکانیزم زیستی اونها ممکنه قابل فهم نباشه.

20. **According to the passage**, which of the following is a true statement about **density-dependent** factors in population growth?

Comment [M28]: اول سوال رپورت هستش و پاسخ مستقیما در پسج اومه و دوما کلوی سوال درمورد عوامل وابسته به تراکم جمعیت

(A) They ultimately account for long-term population levels.

Comment [M29]: این گزینه دقیقا در رزالت پاراگراف سوم ذکر شده. **Yet, whether recognized or not, they will usually determine the long-term average population density**

(B) They have **little** to do with long-term population dynamics.

Comment [M30]: برخلاف نتیجه پاراگراف سوم هستش

(C) They are always **more easily isolated** and described than those that are density-independent.

Comment [M31]: در مورد نحوه اندازه گیری و توصیف عوامل مقایسه ای در پسج نشده و این گزینه غلطه

(D) They include **random environmental** events.

Comment [M32]: برخلاف تعریف عوامل وابسته به تراکم مندرج در پاراگراف اول هستش

(E) They **contradict** current ecological assumptions about population dynamics.

Comment [M33]: در پسج نیومده چنین تناقضی

21. **According to the passage**, all of the following behaviors have been exhibited by

Comment [M34]: باز سوال رپورت بوده و جواب در پسج صریحا اومه و کلوی سوال هم رفتارهای جمعیتی هستش



different populations EXCEPT:

- (A) roughly **constant** population levels from year to year
- (B) regular **cycles** of increases and decreases in numbers
- (C) **erratic increases** in numbers correlated with the weather
- (D) **unchecked increases** in numbers over many generations
- (E) **sudden declines** in numbers from time to time

Comment [M35]: در پاراگراف اول اومده some populations remain roughly constant from year to year; others exhibit regular cycles of abundance and scarcity; still others vary wildly, with outbreaks and crashes that are in some cases plainly correlated with the weather, and in other cases not.

Comment [M36]: در پاراگراف اول اومده others exhibit regular cycles of abundance and scarcity

Comment [M37]: در پاراگراف اول اومده ; still others vary wildly, with **outbreaks** and crashes that are in some cases plainly correlated with the weather

Comment [M38]: دقیقاً برخلاف بگنراند پسبج در مورد عوامل کنترول جمعیت هستش و گزینه ای هستش که در پسبج نیومده

Comment [M39]: در پاراگراف اول اومده ; still others vary wildly, with outbreaks and **crashes** that are in some cases plainly correlated with the weather

22. The discussion concerning population in lines 24-40 (آکولاد آبی) serves primarily to

- (A) demonstrate the **difficulties** ecologists face in studying density-dependent factors limiting population growth
- (B) advocate more **rigorous study** of density-dependent factors in population growth
- (C) **prove** that the death rates of any population are never entirely density-independent
- (D) give an **example** of how death rates function to limit population densities in typical populations
- (E) underline the importance of even **small density-dependent** factors in regulating long-term population densities

Comment [M40]: در مورد سختی های اندازه گیری عوامل مربوط به تراکم چیزی در پاراگراف آورده نشده است.

Comment [M41]: باز در مورد مطالعه جدی این عوامل هم تاکید در پاراگراف آورده نشده است.

Comment [M42]: اثباتی صورت نگرفته و صرفاً اهمیت عوامل مربوط به تراکم در مرگ و میر توصیف شده

Comment [M43]: مثالی آورده نشده

Comment [M44]: این گزینه دقیقاً اشاره به اهمیت یک درصد عوامل تراکمی در میانگین جمعیت طولانی مدت داره



23. In the passage, the author does all of the following EXCEPT:

- (A) cite the views of **other** biologists
- (B) define a basic **problem** that the passage addresses
- (C) present conceptual categories used by **other** biologists
- (D) describe the results of a **particular study**
- (E) **draw a conclusion**

Comment [M45]: پاراگراف دوم : لغت دیگر بیولوژیست ها دقیقاً به تفاوت دیدگاه نویسنده در پاراگراف چهارم با سایر زیست شناسان اشاره می کند.

Comment [M46]: پاراگراف سوم
This dichotomy has its uses, but it can cause problems if taken too literally

Comment [M47]: دقیقاً به دو طبقه بندی عوامل وابسته و مستقل از چگالی که توسط سایر زیست شناسان استفاده شده اشاره داره

Comment [M48]: هیچ مطالعه مشخصی در پسیج رفرنس داده نشده و فقط دیدگاه های مکتب خاصی در مورد کنترل جمعیت بیان شده بدون اینکه به پژوهش های اون ارجاع بشه.

Comment [M49]: پاراگراف آخر
But it now seems clear that all populations are regulated by a mixture of density-dependent and density-independent effects in varying proportions.

