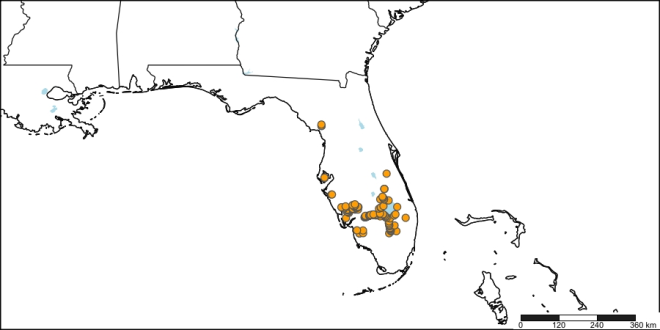


Bermont Formation

Middle Pleistocene

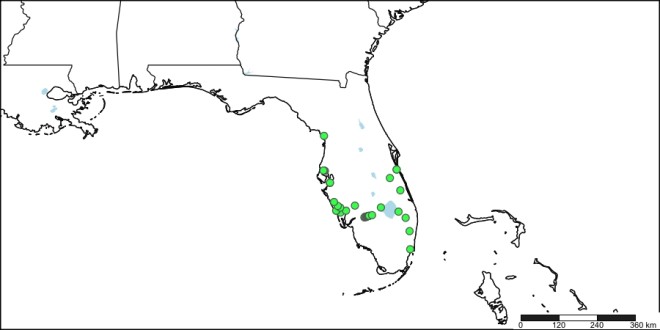
~500,000 years old



Caloosahatchee Formation

Lower Pleistocene

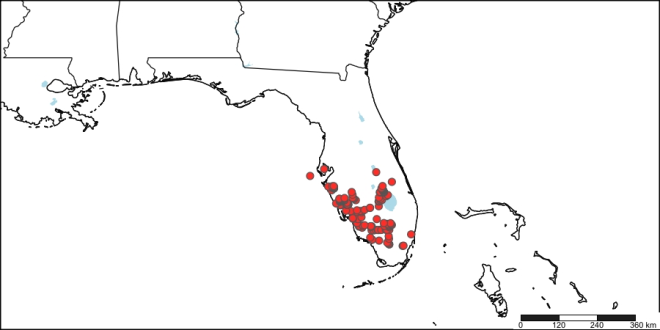
~2 million years old



Fort Thompson Formation

Upper Pleistocene

~50,000 years old



Tamiami Formation

Upper Pliocene

~3 million years old

**Time Series Maps**

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Species Through Time: Time Series Data

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Group | Species | Tamiami Formation | Caloosahatchee Formation | Bermont Formation | Fort Thompson Formation |  |
|  |  | ~3 million years ago | ~2 million. years ago | ~500,000 years ago | ~50,000 years ago | Today |
| Gastropods | *Conus adversarius* | 2810 | 1421 |  |  |  |
|  | *Conasprella marylandica* | 202 | 15 |  |  |  |
|  | *Fusinus*  *equalis* |  |  |  |  |  |
|  | *Neverita duplicata* |  |  |  |  |  |
|  | *Turritella subannulata* |  |  |  |  |  |
|  | *Xenophora floridana* |  |  |  |  |  |
| Bivalves | *Chesapecten jeffersonius* |  |  |  |  |  |
|  | *Crassostrea virginica* |  |  |  |  |  |
|  | *Lucina pensylvanica* |  |  |  |  |  |
|  | *Panchione ulocyma* |  |  |  |  |  |
|  | *Planicardium virginianum* |  |  |  |  |  |
| Corals | *Manicina areolata* |  |  |  |  |  |

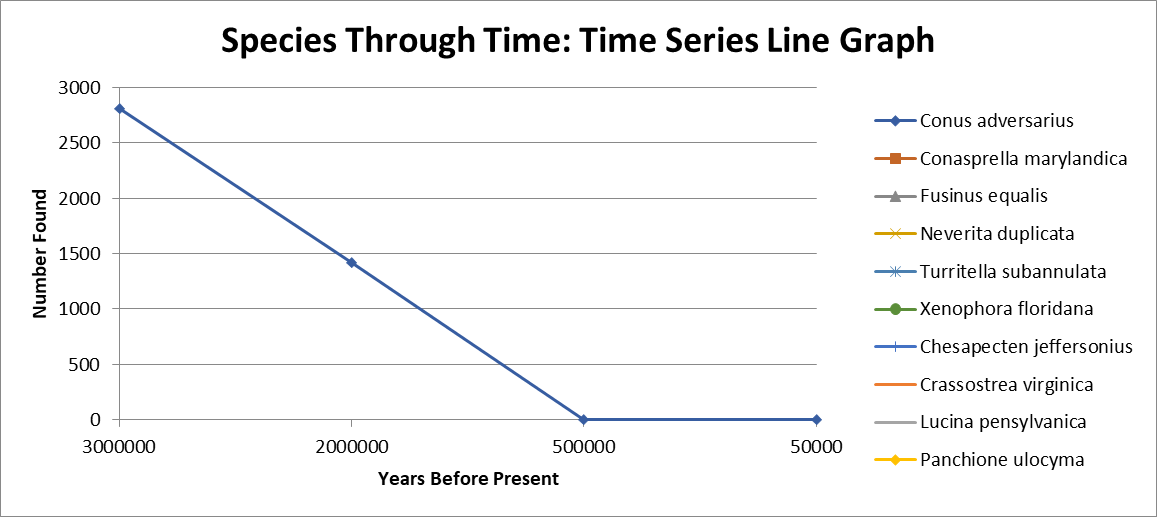
What do you notice about the data? What general pattern do you see in the data table or line graph?

Do all the species follow this pattern? What are the similarities and differences in abundance through time among the species?

What are some possible explanations for the patterns you observe in the data?

Several of the species have zeros for certain points of time. What might this mean? Write three possible reasons there might be zeros in the data.

|  |  |  |  |
| --- | --- | --- | --- |
| **Species Through Time: Time Series Data** | | | |
| **Tamiami Formation**  **(Pinecrest Beds):**  **Southern Florida**  Late Pliocene  ~3 million years old  1,741 invertebrate species  241,963 specimens  **Gastropods**  *Conus adversarius*: 2810  *Conasprella marylandica*: 202  *Fusinus equalis*: 50  *Neverita duplicata*: 958  *Turritella subannulata*: 267  *Xenophora floridana*: 399  **Bivalves**  *Chesapecten jeffersonius*: 2  *Crassostrea virginica*: 164  *Lucina pensylvanica*: 1124  *Panchione ulocyma*: 457  *Planicardium virginianum*: 41  **Corals**  *Manicina areolata*: 68 | **Caloosahatchee Formation: Southern Florida**  Early Pleistocene  ~2 million years old  1,520 invertebrate species  203,127 specimens  **Gastropods**  *Conus adversarius*: 1421  *Conasprella marylandica*: 15  *Fusinus equalis*: 0  *Neverita duplicata*: 543  *Turritella subannulata*: 2977  *Xenophora floridana*: 368  **Bivalves**  *Chesapecten jeffersonius*: 2  *Crassostrea virginica*: 348  *Lucina pensylvanica*: 531  *Panchione ulocyma*: 1  *Planicardium virginianum*: 0  **Corals**  *Manicina areolata*: 149 | **Bermont Formation: Southern Florida**  Middle Pleistocene  ~500,000 years old  1,000 invertebrate species  140,574 specimens  **Gastropods**  *Conus adversarius*: 5  *Conasprella marylandica*: 0  *Fusinus equalis*: 0  *Neverita duplicata*: 331  *Turritella subannulata*: 675  *Xenophora floridana*: 89  **Bivalves**  *Chesapecten jeffersonius*: 0  *Crassostrea virginica*: 82  *Lucina pensylvanica*: 395  *Panchione ulocyma*: 0  *Planicardium virginianum*: 0  **Corals**  *Manicina areolata*: 244 | **Fort Thompson Formation: Southern Florida**  Late Pleistocene  ~50,000 years old  296 invertebrate species  45,675 specimens  **Gastropods**  *Conus adversarius*: 0  *Conasprella marylandica*: 0  *Fusinus equalis*: 0  *Neverita duplicata*: 176  *Turritella subannulata*: 2  *Xenophora floridana*: 0  **Bivalves**  *Chesapecten jeffersonius*: 0  *Crassostrea virginica*: 7  *Lucina pensylvanica*: 93  *Panchione ulocyma*: 0  *Planicardium virginianum*: 0  **Corals**  *Manicina areolata*: 0 |
| **Today:**  *Conus adversarius*: Extinct  *Conasprella marylandica*: Extinct | *Fusinus equalis*: Extinct  *Neverita duplicata*: Alive  *Turritella subannulata*: Extinct  *Xenophora floridana*: Extinct | *Chesapecten jeffersonius*: Extinct  *Crassostrea virginica*: Alive  *Lucina pensylvanica*: Alive | *Panchione ulocyma*: Extinct  *Planicardium virginianum*: Extinct  *Manicina areolata*: Alive |

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Group Names \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| **Current Evidence about Patterns in the Data**  *Things we know based on the current data sets: write both what we know and how the data shows it.* | **External Evidence**  *Things we know from other sources: books, other data, other science units, etc. Write both info and source.* | **Hypotheses and Speculation about Causes for Patterns**  *Ideas about what might have caused the changes observed in the data.* | **Open Questions and Missing Information**  *Things we don’t know or things we need to know to answer questions.* |
|  |  |  |  |