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Production Trends in stamps showing Prehistoric Life – a preliminary look

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Introduction

This article is a brief summary of trends observed from analysis of an updated and filtered version of the American Topical Association (ATA) Dinosaur and Fossils checklist. Understanding the composition of paleo-subjects on postage stamps may provide constraints on how these stamps are used in education and outreach – a person attempting to teach paleontology through stamps may be disappointed to find out that the taxonomic coverage might not allow fine detail for groups such as the invertebrates but allow a much more detailed look at dinosaur taxonomy.

Methods and Datasets

We used as the base database, the American Topical Association's Dinosaurs and Fossils checklist from 2018. This database was filtered to remove: 1) comedic or juvenile themes (Flintstones, Disney, Jules Verne's Journey to the Center of the Earth, children's artwork on stamps, etc.), 2) recently extinct organisms that had died out during the historical record (the Dodo, Bering Sea Cow, Aurochs, etc.), and 3) non-relevant stamps. We updated this database with relevant (non-Stamperija) issues from 2018-2022. Each Stamp was then coded with one of the following: Invertebrate, Fish, Amphibian, Non-dinosaur Reptiles, Dinosaurs, Mammals, and Other. The "Other" category included both Plants and Trace Fossils. Trace fossils were lumped in with plants because they included two major types – footprints and stromatolites. Stromatolites being sedimentary deposits mediated by photosynthetic bacteria are linked to plants due to photosynthesis. Other trace fossils (footprints, eggs) were left in this "Other" category to not further dilute the numbers of stamps in the category.

Microsoft Excel was used to create a series of time-frequency plots showing the production frequency of each subset of prehistoric life through the interval from 1951 to the present. The earliest stamp confirmed to depict a prehistoric animal is India's Centenary of the Geological Survey issue depicting *Stegodon ganesa* (Scott # 232) (<http://www.paleophilatelie.eu/milestones.html>). The most recent prehistoric animal stamps depict *Triceratops* sp. and *Liopleurodon* sp. (Armenia, 2022, no Scott # yet). There is a boundary condition in this dataset – it does take time for new issues to be assigned Scott Catalog numbers and for the most recent years, the issue counts may be inaccurate. Microsoft Excel was also used to determine total counts for each theme (see Table 1).

Results and discussion

All Issues Trends

The production and publication of stamps depicting prehistoric life show a bimodal distribution with two major peaks between 1990 and 2002 (Figure 1). The earlier peak starts in the late 80's including the

1989 U.S. Dinosaur set (Scott # 2422-2425) and ended in 1996. The later peak starts in 1997 and ends in 2003. In the interval between 1951 and 1988, production ranged from 0 to approximately 20 issues per year with a plateau developing from 1965 to 1989 where production was relatively constant. Post 2003, the publication record shows several small peaks with a decreasing number of issues in the last couple of years (with the caveat that this interval does not list a large number of Stamperija issues that would swamp the production of countries with more realistic publishing trends).

The plateau starts off in the 1960s with the publication of the Polish prehistoric animal stamps (1965 – SC – 1307-1316 [see figure 2A) and 1966 – SC – 1395-1403). These issues were released roughly at the time that Polish Paleontologists were developing partnerships with other Soviet-bloc countries to explore Mongolia's Mesozoic deposits – several expeditions would be run through the late 1960's. The popularity of the Polish prehistoric animal stamps encouraged Romania to publish prehistoric mammals (1966, SC – 1887-1892), Mongolia to publish prehistoric animals (1967, SC – 447-454), Czechoslovakia to issue a set of stamps in honor of the 23rd International Geological Congress (1968, SC – 1559-1563), and Hungary to publish a set of stamps in honor of its Institute of Geology that included both fossils and minerals (1969, SC – 1990-1996). We should also note that the western nations also had a very popular set of prehistoric stamps issued in 1965 – the prehistoric animal set of San Marino (SC – 612-620).

The numbers of stamps produced starts to increase in the late 1980's as several countries issued stamps to encourage topical collectors to purchase their stamps including Afghanistan (1988, SC – 1279-1285), Laos (1988, SC – 860-866), and Tanzania (1988, SC – 382, 383, 384, 389). This increase is somewhat coincident with the rise of Dune stamps – where several Middle Eastern countries published a variety of topical issues to try to sell stamps to collectors including some illegal issues. A good example would be Manama's (United Arab Emirates) 1971 prehistoric animal air mail stamps. Illegal issues showing prehistoric animals include stamps listed as being from Oman or Dhufar were issued in 1980 by separatist groups in both regions.

In 1993, the first Jurassic Park film was released and would eventually earn more than a billion dollars in box office receipts. The film currently holds the title of #40 in the all-time ranking for worldwide box office performance (source – Wikipedia.org). This release was capitalized on by multiple countries across the world – for example, Australia (SC – 1342-1347, 1347a, 1347b, and 1347c), Canada (SC – 1495-1498), and New Zealand (SC – 1180-1184) organized a joint release that includes thematic stamp albums (The Stamp of the Dinosaur and Les Dinosaurs) that included mint copies of the three sets (Figure 2B). Australia used the release of the film to publicize their National Stamp Collecting Month and used commemorative postmarks that directly highlighted the film (Figure 2C) in their marketing. The second peak in the 1990s appears to lag the release of the second Jurassic Park, The Lost World (release date – 1997). While the film only grossed ~620 million dollars, it ranks 156 in the all-time ranking for world box office performance (source – Wikipedia.org). During this second peak, the U.S. published the "World of Dinosaurs" set (SC – 3136a-3136o) as a souvenir sheet with 2 panels depicting the earth 150 million years ago (the Jurassic of Colorado) and 75 million years ago (the Cretaceous of Montana) (Figure 2D). The U.S. Postal Service even recognized the character of T-Rex from the Jurassic Park movies on a stamp released in 2000 (Figure 2E) in the Celebration of the Century "1990s Decade" subset!

Post-2002, production of stamps depicting prehistoric life have decreased in number significantly – though this is likely an artifact of Scott Catalog's decisions on which countries have realistic stamp programs vs. the countries that swamp the market with issues never seen in the post offices of the

publishing country. There is a small peak that starts at 2014 that may in part be due to the release of the second trilogy in the Jurassic Park universe – Jurassic World (released in 2015).

Proportional Representation of different Taxa on stamps

The combined database lists 3,785 stamps. It should not be surprising that roughly 59% of these stamps depict dinosaurs and prehistoric reptiles in general dominate most stamps (~78%) in this database. The next highest representation is for mammals with roughly 11% of issues. All other taxa represented fall into the remaining 11%.

Anecdotally, our observations from years of collecting and perusal of both websites (<http://www.paleophilatelie.eu/> and <http://www.stampedout.nl>) and the ATA checklist suggest the following trends:

- 1) The majority of prehistoric life stamps show reconstructions of the animals. Photographs and sketches of fossils or line drawings of the skeletons are much rarer across all taxa.
- 2) The majority of prehistoric animals depicted are of significant body size. Dinosaurs for example tend to be dominated by the large animals of the Jurassic and Cretaceous from Western North America (large sauropods, *Tyrannosaurus rex*, *Triceratops* sp., etc.). Mammals also show a similar trend – with most depictions focusing on the megafauna that lived during the last ice age (Mastodons, Mammoths, Cave Bears, Giant Deer, etc.).
 - a. Reconstructions vary – some countries have their artists consult with paleontologists to ensure that reconstructions are scientifically valid, while others use outdated or inaccurate reconstructions.
- 3) There is a subset of countries that focus on prehistoric animals that lived in the past within the current boundaries of the country. This set includes larger countries like the U.S., Canada, and Australia as well as some smaller countries like Slovakia or Greenland. Other countries publish a wide variety of prehistoric animals from all over the world – usually with no tie to the publishing country. For example, the Comoros Islands issued a souvenir sheet with *Ceratosaurus* sp. (1999, SC – 892). *Ceratosaurus* sp. lived during the Late Jurassic in Colorado – well before the volcanic islands of the Comoros archipelago developed 7 million years ago!

Figure 3 shows frequency plots for each taxa. In all the plots there is a significant peak or peaks in the interval between 1990 and 2002. The overall structure of the database is heavily influenced by the dinosaur (+ other reptiles) and mammal subsets.

Conclusions

Prehistoric organisms have been reproduced on postage stamps since the early 1950s. The most commonly depicted animals are dinosaurs followed by other reptiles (plesiosaurs, ichthyosaurs, pterosaurs, mammal-like reptiles (*dimetrodon* and relatives), and other reptiles) and mammals (dominantly ice age mammals). The rest of the kingdoms of life make up a tiny percentage of the prehistoric organisms depicted on stamps.

The plots show that the presentation of prehistoric life on stamps has undergone four phases over the last seventy years. Between 1951 and 1965, prehistoric life stamps were rare with a handful published each year. After the release of the Polish stamps of 1965 and 1966, the numbers of stamps produced

increased to approximately 20 stamps per year until the late 1980s. A significant pair of peaks is recorded in the number of issues released between 1990 and 2002 – with significant increases lagging the release of the popular films of the Jurassic Park franchise. After 2002, production numbers decreased (at least in terms of non-Stamperija numbers).

Taxa	# Of issues through 2022	Proportion (%)
Other (Plants, microfossils, trace fossils)	46	1.2
Invertebrates	146	3.9
Fish	80	2.1
Amphibians	32	0.8
Reptiles (Total)	2949	77.9
Non-dinosaur Reptiles	734	19.4
Dinosaurs	2225	58.8
Birds	124	3.3
Mammals	408	10.8
Total	3785	

Table 1: Summary statistics describing the types of organisms depicted on stamps.

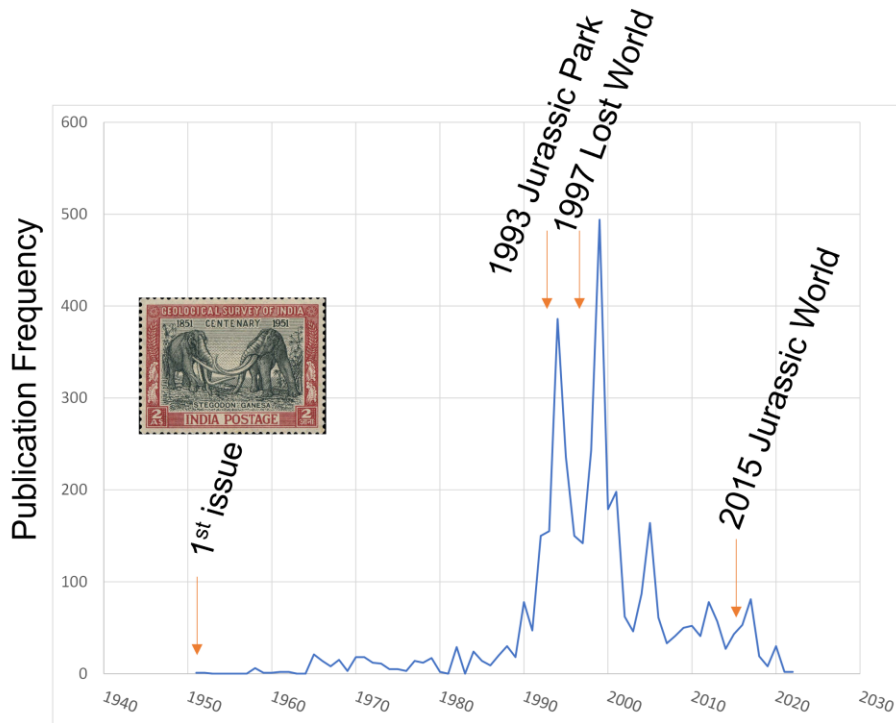


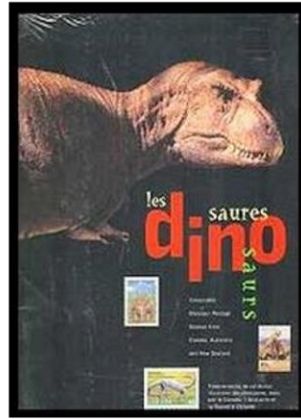
Figure 1: Plot of publication frequency of all stamps depicting prehistoric life. Note the bimodal distribution between 1990 and 2002 followed by smaller peaks over the last two decades. Production increases occur shortly after the release of the first two Jurassic Park films released in 1993 and 1997 – likely as postal services capitalized on the widely popular films.

A.

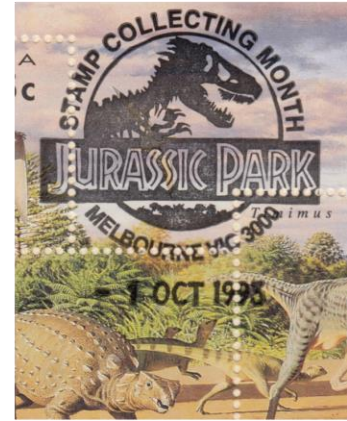


Poland 1965, SC1311

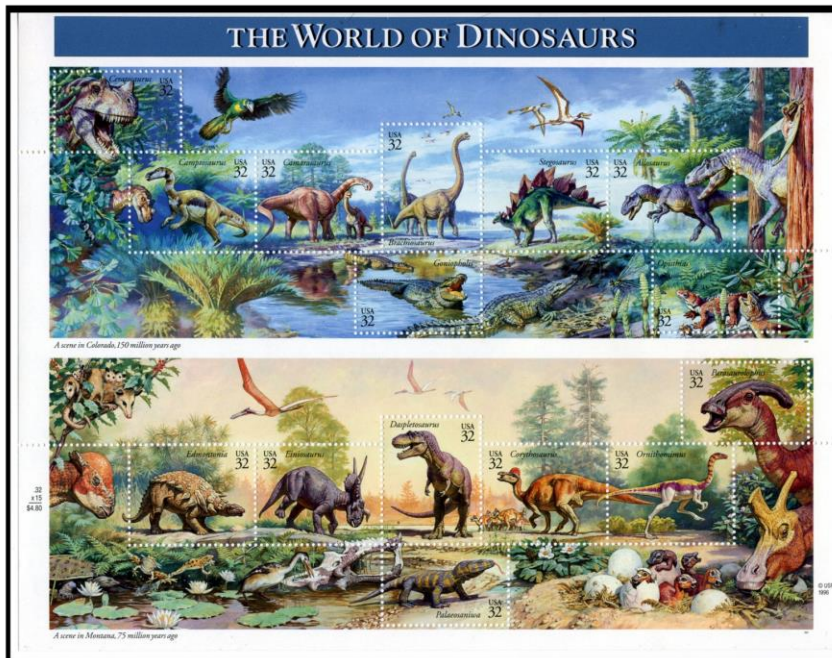
B.



C.



D.



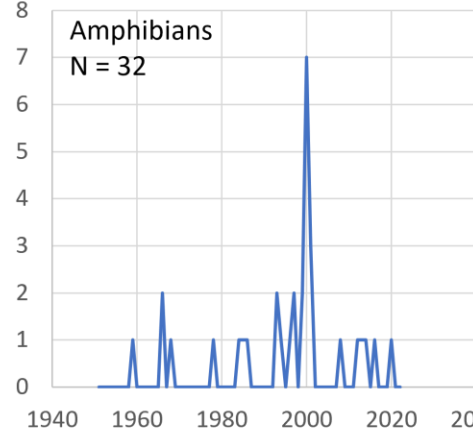
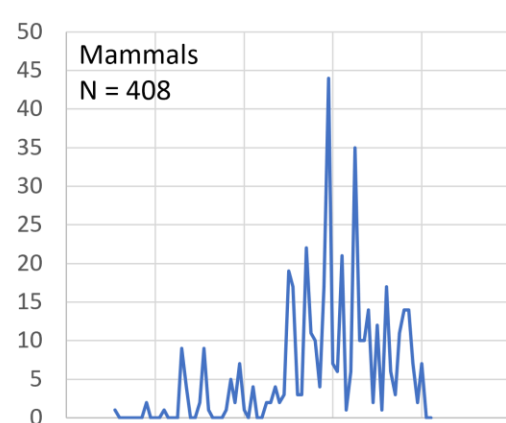
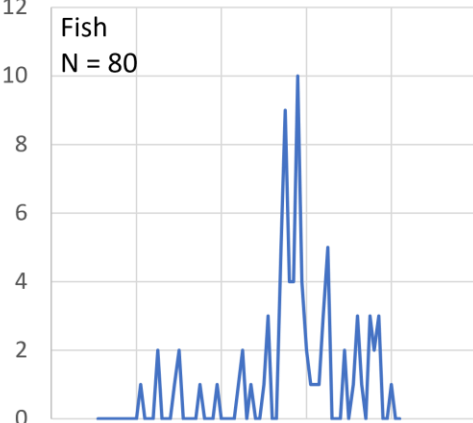
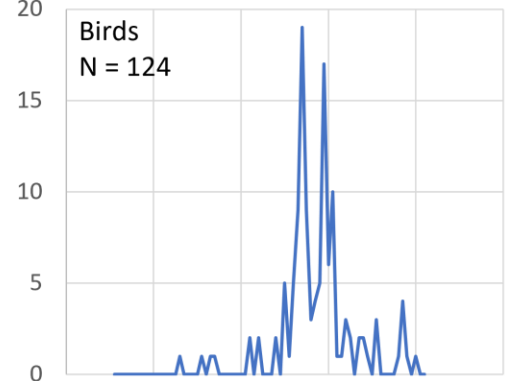
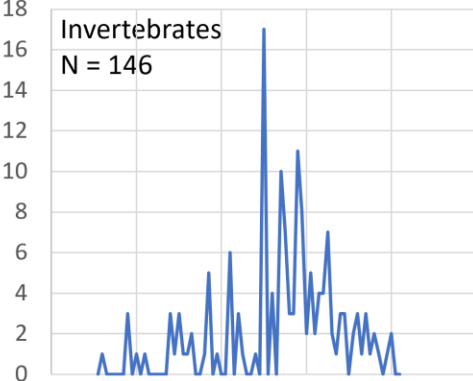
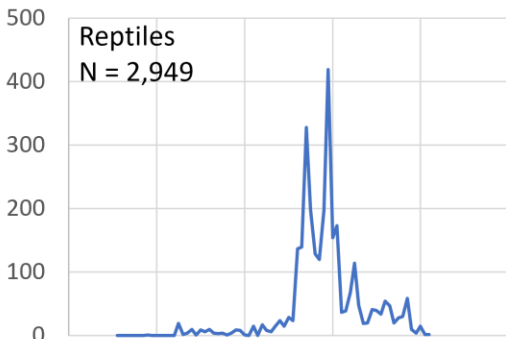
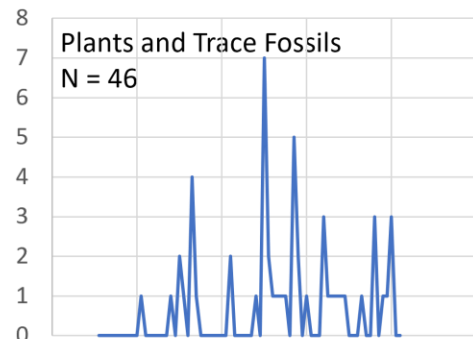
USA 1997, SC 3136a-3136o

E.



USA 2000, SC 3191k

Figure 2A) One of the Poland 1965 Prehistoric Animals stamps showing a reconstruction of *Stegosaurus*. This set popularized prehistoric life stamps in the Soviet bloc countries. B.) Cover of Stamp Album booklet released by Canada Post in 1993. This album was one design released for use by children that had short descriptive texts about the prehistoric animals shown on the Australian, Canadian and New Zealander stamps issued that year. C) One of several Australian Postmarks issued in honor of Stamp Collecting Month (October 1993) with the Jurassic Park logo taking center stage in the postmark. D) A panel of stamps released by the U.S. Postal Service May 1st, 1997 – the second Jurassic Park movie, *The Lost World* was released shortly after on May 19th. E) The U.S. Postal service commemorated the character of T-Rex from Jurassic Park on this stamp from the Celebrate the Century 1990's decade set in 2000.



1940 1960 1980 2000 2020 2040

Figure 3 (preceding page) – Comparison of frequency plots for each taxa. Note that all the plots exhibit at least one peak in the interval between 1990 and 2002. The peak structure in Figure 1 is heavily influenced by the structure in the dataset from Reptiles and Mammals, as both groups show two distinct peaks in the 1990-2002 interval.