

Fossil Amphibia on Stamps

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Amphibians are primitive tetrapods that are limited to moist habitats. Their skin is permeable and most modern amphibians lack scales (caecilians are an exception). Their eggs are covered in gelatinous material excreted by the female which is water permeable and restricts amphibians to reproducing in wet or moist environments. Modern amphibians spend their juvenile stage in water where they breathe with gills. During metamorphosis, in most species the juvenile develops lungs. Amphibians are ectotherms – they do not regulate their internal body temperature. With the cladistic revolution as well as new fossil discoveries, amphibian taxonomy is in a bit of disorder. Cowen's History of Life (Benton, 2020) subdivides the Amphibia (Figure 1) into the Batrachosaurs (including Temnospondyls and modern Lissamphibians), and Reptiliomorphs (Lepidospondyls and Anthracosaurs). There is also an increasingly diverse array of early tetrapods that are transitional between a sarcopterygian fish ancestor and true amphibians – these fossils are classified as tetrapodomorphs. Note that I will include Tetrapodomorphs as “Amphibians” in the sense that they are semi-aquatic tetrapods that likely spent some time on land and breathed air – though modern classification techniques would leave them as a paraphyletic taxa that is a sister group to the Class Amphibia. A variety of prehistoric amphibians have been exhibited on stamps (Table 1 and Figures 1 and 2) and other philatelic materials (Table 2 and Figures 3-6).

Tetrapodomorphs are known primarily from Late Devonian and Early Carboniferous rocks of what is now northern North America (Canada, Greenland, and Pennsylvania) and central Europe (Poland and western Russia). Some specimens have also been described from Australia and China. The far majority of the specimens are found in redbeds – sandstones deposited in riverine settings, suggesting a freshwater origin for this group. The classic tetrapodomorphs are *Ichthyostega* and *Acanthostega*, both found in rocks from Greenland. Both genera are found on stamps, with *Ichthyostega* being one of the commonest amphibians on stamps (Figure 3). These animals are still well adapted for life in water – but their bodies exhibit early adaptations that will be important later for their descendants including stronger pelvic and pectoral girdles. Another important adaptation is the choana. Most fish have two sets of nostrils – with one set adapted for ingoing water and the second set for the outgoing water (excurrent nostrils). In some early tetrapodomorphs, the excurrent nostrils migrate to a position on the edge of the mouth. In later tetrapodomorphs (and tetrapods), the excurrent nostrils are positioned inside the mouth forming the choana. Note that in mammals, the secondary palate separates the choana from the mouth – allowing us to breathe and eat at the same time!

Reptiliomorphs are also referred to as stem-amniotes and include amniotes (reptiles, birds and mammals) as well as some amphibians that are more closely related to the amniotes than they are to modern Lissamphibians. Amniotes lay specialized eggs that bear several adaptations including a hard shell, and two sacs – the amnion filled with nutrients used by the growing embryo and the allantois that collects the embryo's waste products. Reptiliomorphs include Lepospondyls and Anthracosaurs. The Lepospondyls all share spool-shaped vertebrae that grew as simple bony cylinders around the spinal cord. Most Lepospondyls lived during the Mississippian to Early Permian Periods – with one species found in Late Permian rocks of Morocco. Their range included North America, Europe and Morocco. *Diplocaulus* (see Gabon 1017j for example) is one example of a Lepospondyl shown on stamps. Anthracosaurs are another group that were common in the Mississippian to Early Permian Periods. Anthracosaurs used to

be called labyrinthodontids due to their really unique teeth. As their teeth grew, the dentin and enamel infolded. In cross-section, their teeth look like a labyrinth or maze. Unfortunately, labyrinthodont teeth are not a great character to use in classification – as Lepspondyls and Temnospondyls also exhibit these teeth. The most common Anthracosaur on stamps is *Seymouria*, a genus found in Early Permian rocks of North America (named for Seymour, Texas) and Europe. *Seymouria* was once considered an early reptile until tadpoles of a closely related genus *Discosauriscus* were discovered in the 1950's, showing that anthracosaurs had a larval stage like other amphibians.

The last group of Amphibians are the Batrachosaurs, which include all modern amphibians (the Lissamphibia) and the extinct Temnospondyls. Temnospondyls were an incredibly diverse group of labyrinthodontid amphibians that are found worldwide in rocks from Mississippian to Cretaceous in age. *Koolasuchus* (Australia 3986 and 3992) was one of the last known temnospondyls – as it lived in rift valleys in polar Australia during the Early Cretaceous. *Koolasuchus* was a quite large amphibian with estimates of its weight being 1,100 pounds! *Eryops* is probably the classic temnospondyl shown in many reconstructions of Early Permian terrestrial life – and has been shown on several stamps including the People's Republic of Benin 887 and Guyana 3667b. Lissamphibians include frogs (Figure 4), salamanders and caecilians. Several frogs are shown on stamps from Germany, Libya, and most recently in the 2020 Prehistoric Animals of Hungary issue (described in the June 2020 issue of Biophilately Magazine). A fossil salamander is shown on Switzerland B286 – the only semi-postal that I know of that shows a fossil amphibian (Figures 2 and 4).

Below is a checklist of fossil amphibia on stamps as well as pictures of relevant philatelic materials. Please note that due to space considerations not all issues (Table 1 and Figure 2) or philatelic materials (Table 2) are reproduced in this article.

Table 1: Prehistoric Amphibians on stamps

Country	Date	Denomination	Scott Catalogue #	Description
Australia	9-04-1997	45c	1615	<i>Paracyclotosaurus</i>
Australia	9-24-2013	60c	3986, 3992	<i>Koolasuchus</i>
People's Republic of Benin	8-30-1996	100fr	887	<i>Eryops</i>
Brazil	10--12-2014	1.30r	3285a	<i>Prionosuchus plummeri</i>
Cambodia (Kampuchea)	3-20-1986	80c	665	<i>Mastodonsaurus</i>
Central African Republic	12-15-2015	900fr		Fossil frog
People's Republic of Congo	8-20-1993	75fr	1043	<i>Ichthyostega</i>
Czechoslovakia	8-08-1968	60h	1560	<i>Paleobatrachus grandipes</i> (Giebel)

Table 1 Continued:

Fiji	8-15-2006	\$1.50	1106	<i>Platymantis megabotoniviti*</i>
Gabon	12-20-2000	500fr	1011	<i>Acanthostega</i>
Gabon	12-20-2000	260fr	1017c	<i>Acanthostega</i>
Gabon	12-20-2000	260fr	1017h	<i>Pholidogaster</i>
Gabon	12-20-2000	260fr	1017i	<i>Gerrothorax</i>
Gabon	12-20-2000	260fr	1017j	<i>Diplocaulus</i>
Gambia	2-06-1995	2d	1605k	<i>Giantoperis</i>
Gambia	8-01-1999	3d	2140j	<i>Cacops</i>
Gambia	8-01-1999	3d	2140k	<i>Ichthyostega</i>
German Democratic Republic	10-24-1978	35pf	1961	<i>Paleobatrachus diluvianus</i> (Wiederau)
Greenland	5-24-2008	20.50k	522	<i>Ichthyostega stensioei</i>
Grenada Grenadines	4-15-1997	\$1.50	1914f	<i>Platyhystrix</i>
Guinea-Bissau	11-12-2018	640fr		<i>Seymouria</i>
Guyana	3-10-1993	\$30	2662j	<i>Cacops</i>
Guyana	10-15-2001	\$100	3667a	<i>Ichthyostega</i>
Guyana	10-15-2001	\$100	3667b	<i>Eryops</i>
Guyana	10-15-2001	\$100	3667f	<i>Eogyrinus</i>
Hungary	3-04-2020	200f	4545a	<i>Hungarobatrachus</i>
Liberia	11-22-1999	\$10		<i>Acanthostega</i>
Liberia	11-22-1999	\$10		<i>Cacops</i>
Libya	3-01-1985	150d	1245	Fossil frog
Mozambique	4-30-2012	66m	2591a	<i>Ichthyostega</i>
Mozambique	4-30-2012	16m	2629e	<i>Peltobatrachus pustulatus</i>
Mozambique	6-15-2018	116m		<i>Diplocaulus</i>

Table 1 Continued:

Mozambique	4-10-2019	116m		<i>Seymouria</i>
Niafo'ou (Tonga)	8-01-1989	57s	117	Carboniferous era scene with insect and amphibian (Ichthyostega?)
Niafo'ou (Tonga)	11-17-1989	1pa	118	Carboniferous era scene with insect and amphibian (Ichthyostega?)
Nicaragua	1-16-1999	\$6		<i>Thadeosaurus</i> **
Niger	10-27-2000	475fr	1061a	<i>Palaeobatrachus</i>
Niger	10-27-2000	475fr	1062c	<i>Metoposaurus</i>
Niger	11-20-2017	800fr		<i>Ichthyostega</i> on land and <i>Tiktaalik</i> in water.
Poland	3-05-1966	40g	1397	<i>Ichthyostega</i>
Poland	3-05-1966	50g	1398	<i>Mastodonsaurus</i>
São Tomé and Príncipe	10-22-2019	31d		Fossil frog
Sierra Leone	3-25-2016	24,000le	3704	<i>Diplocaulus</i>
Switzerland	6-01-1959	40c+1c	B286	<i>Andrias scheuchzeri</i>
Togo	5-11-2019	800fr		<i>Seymouria baylorensis</i>
North Vietnam	8-30-1984	2d	1432	<i>Seymouria</i>

*Fiji *Platmantis megabotoniviti* – this species died out in the Late Quaternary – shortly after people arrived on the islands. Most articles refer to subfossil material encased in cave limestone deposits. It is unclear when exactly the animal died out – so this stamp may be less desirable for people looking for prehistoric animals.

**Nicaragua *Thadeosaurus* stamp – van Eijden's website notes that this stamp actually shows *Crassigyrinus* instead of *Thadeosaurus*. *Thadeosaurus* is a diapsid reptile, while *Crassigyrinus* is a tetrapodomorph.

Table 2 – Other Philatelic Materials

Country	Year	Type	Description
Australia	1997	Maxi Card	Official maxi-cards were released for entire set showing fossils of the species.
Australia	2013	Maxi Cards	Official Maxi-cards were released for all issues in set – showing reconstructions of animals.
Benin	1996	Postmark	A special postmark for the first day issue for issues 884-889. Shows a stylized reconstruction of a Tetrapodomorph – likely <i>Crassigyrinus</i> .
Central African Republic	12-03-1993	Margin of Souvenir Sheet	Bottom margin of Souvenir sheet (Scott 1020) shows a <i>Mastodonsaurus</i> .
Chad	3-27-2013	Margin of Souvenir Sheet	The 2017 issue of dimorphodon has a small <i>Diplocaulus</i> in the lower right corner of the souvenir sheet margin.
People's Republic of China	2003	Postal Card	Postal Card exhibits image of fossil frog.
People's Republic of China	2007	Postal Card	Exhibits image of fossil <i>Callobatrachus sanyensis</i> .
Germany	2002	Postmark	Postmark showing <i>Diadectes absitus</i> in honor of the Department of Geosciences and Geography at Goethe Universität in Frankfurt am Main. Note <i>Diadectes absitus</i> is now referred to as <i>Silvadectes absitus</i> .
Greenland	2008	Postmark, Maxi Card and FDC	Greenland Post issued official maxi-cards and FDC showing <i>Ichthyostega</i> for the 2008 issue of 521-523. Postmark shows a reconstruction of the skull of <i>Ichthyostega</i> .
Greenland	2009	Postmark	The 2008 postmark was updated for the 2009 fossils of Greenland issues (533-535).
Guinea	11-01-1997	Margin of Souvenir Sheet	Scott Catalog #1048 <i>Dimetrodon</i> , shows an <i>Eryops</i> in lower left margin of souvenir sheet.
Guinea	5-07-1988	Margin of Souvenir Sheet	Margin shows individuals of <i>Cacops</i> and <i>Ichthyostega</i> in lower left of sheet.
Guinea		Margin of Souvenir Sheet, overprinted with surcharge.	Margin shows individuals of <i>Cacops</i> and <i>Ichthyostega</i> in lower left of sheet. Note this is a reprint/overprinted version of the 1998 issue. Overprint reads 200th anniversary of Charles Darwin.
Guinea-Bissau		Margin of Souvenir Sheet	Margin of souvenir sheet exhibits an <i>Eryops</i> .

Table 2 Continued:

Guinea-Bissau	1-18-2016	Margin of Souvenir Sheet	Lower center margin of souvenir sheet shows a <i>Koolasuchus</i> resting on a log.
Niger	10-24-2018	Margin of Souvenir Sheet	Margin of Rhodocetus souvenir sheet shows <i>Diplocaulus</i> in lower right corner.
North korea	5-20-1999	Margin of Souvenir Sheet	Souvenir Sheet in honor of Charles Darwin's Birthday. Upper margin of Souvenir sheet has an <i>Eusthenopteron</i> in center and just below and to the left a line drawing of an <i>Ichthyostega</i> .
Switzerland	1959	Maxi Card	Maxicard with issue B286 shows <i>Andrias scheuchzeri</i> skeleton
Togo	2019	Margin of Souvenir Sheet	Margin of souvenir sheet shows an <i>Archegosaurus</i> .

Figure 1 (succeeding page): A phylogenetic tree for the Amphibia (after Benson, 2020) with representative stamps showing examples of the major groups (scans from Michael Kogan's paleophilatelie.eu webpage). *Eusthenopteron* (Poland 1396) is a Late Devonian sacropterygian fish thought to be closely related to Amphibians. *Ichthyostega* is a stem-tetrapod or tetrapodomorph from Greenland and has been commemorated on a number of stamps including Greenland 522. A fossil frog from Libya (Libya 1245) represents the *Lissamphibia*, the group that contains all modern Amphibians. *Eryops* is a temnospondyl from northern Texas and is shown on Benin 887. *Diplocaulus* (Gabon 1017j) is an example of the lepospondyls, more reptile-like amphibians. The Chinese postmark from 2006 from Michael's webpage shows a stylized cross-section through an amniotic egg – the feature that links reptiles, birds and mammals.

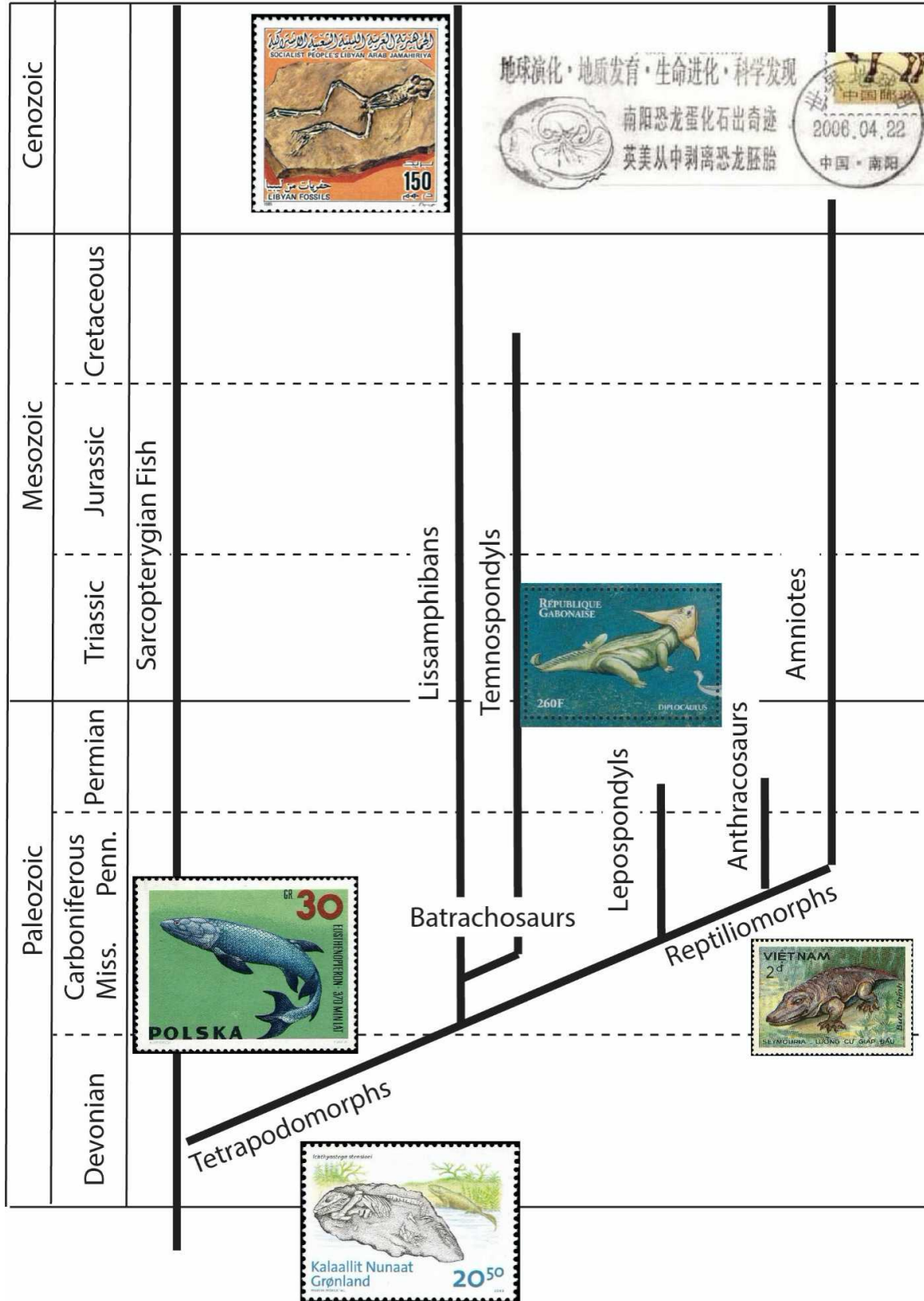


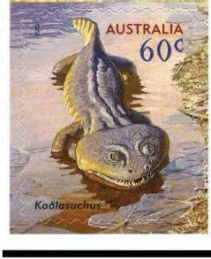
Figure 2: A selection of Stamps exhibiting fossil amphibians. Under each stamp is the country of origin and the Scott Catalogue number for that issue. Scans courtesy of Michael Kogan's paleophilatelie.eu.



Australia 1615



Australia 3986



Australia 3992



Brazil 3285a



DDR 1961



Cambodia 665



Czechoslovakia 1560



Hungary 4545a



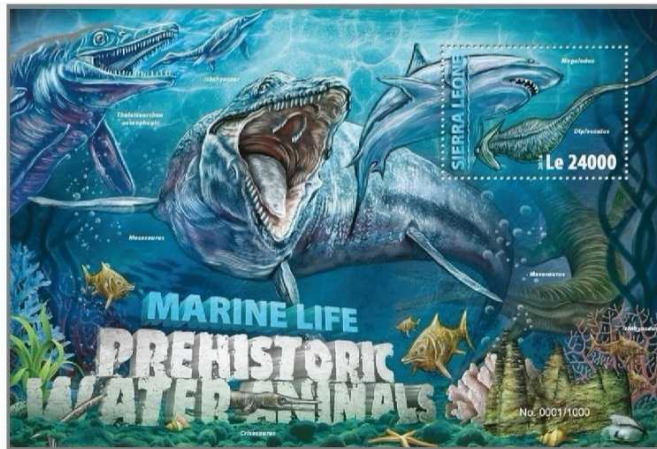
Niafo'u (Tongo) 118



Niger 1061a



Niger 1061c



Sierra Leone 3704



Poland 1397



Poland 1398



Switzerland B286



North Vietnam 1432



Greenland 522



Libya 1245

Figure 3: Philatelic Material for the Greenland 522 issue. Note the official first day cover envelope was used for all three issues in the set – for both single issues and the set of 3 on one cover. Postmarks courtesy of Michael Kogan. Other images are from the author’s collection.

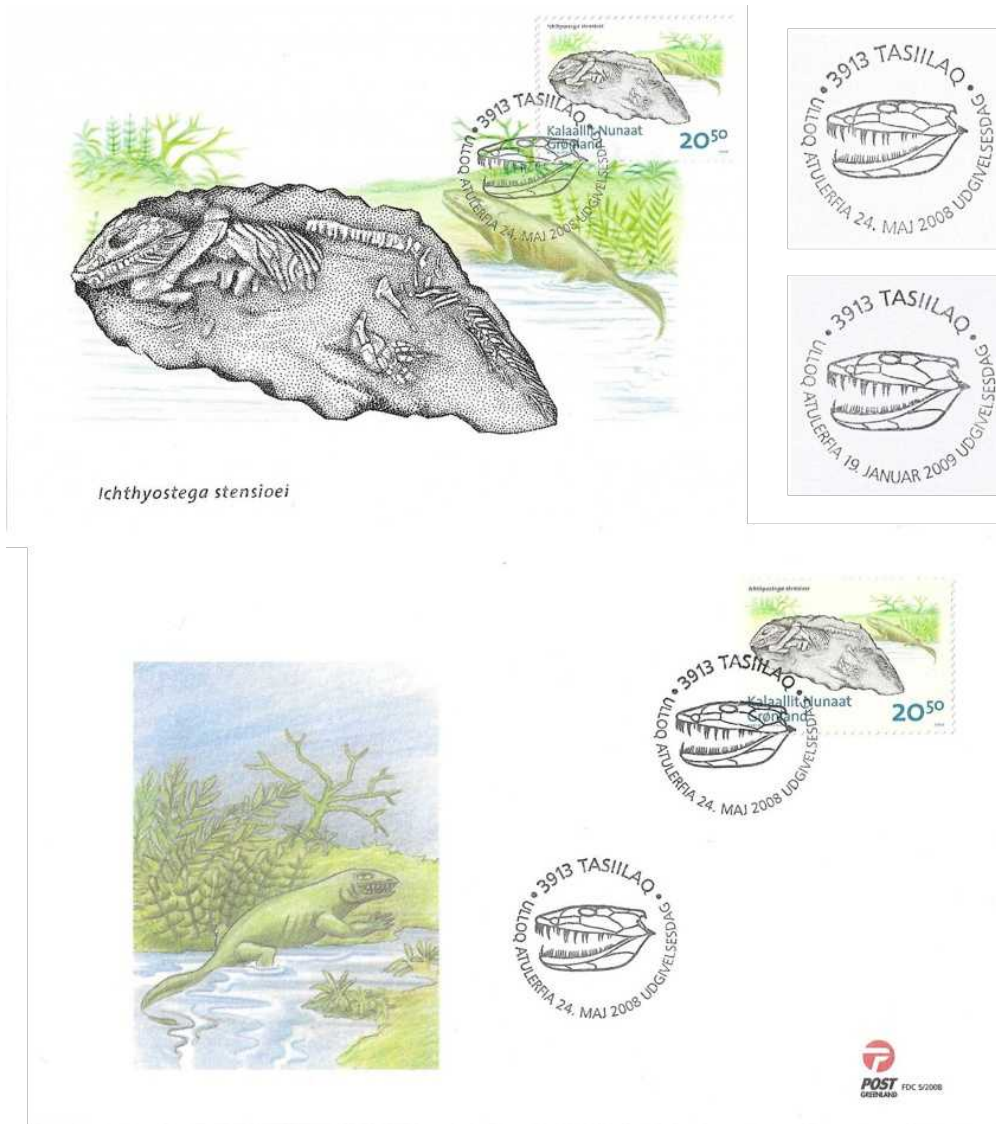


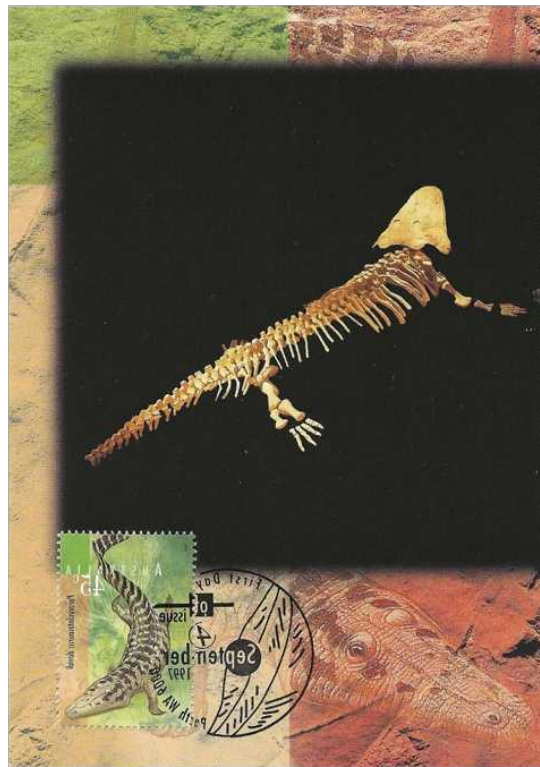
Figure 4: Special Maxi-cards showing fossil amphibians. The Libya 1985 Maxi-card is courtesy of Bob Nowakowski. The Switzerland 1959 Maxi-card is courtesy of Michael Kogan. The Australia 1997 Maxi-card is from the author's collection.



Libya, 1985



Switzerland, 1959



Australia, 1997

Figure 5, Postmark showing *Diadectes absitus* (now *Silvadectes absitus*), courtesy of Michael Kogan's paleophilatelie.eu.

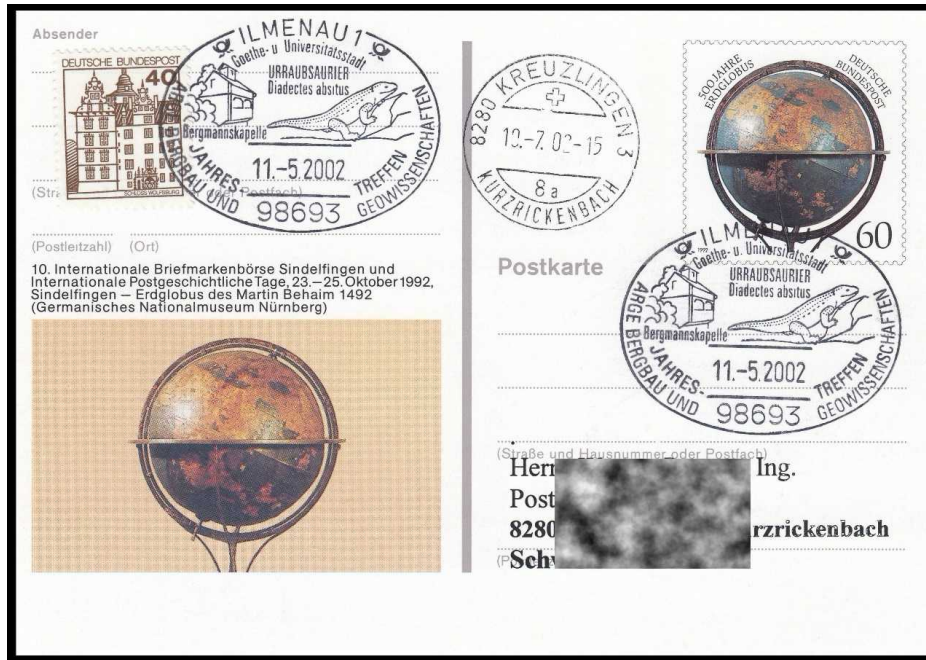


Figure 6: Postmark for the Benin 1996 First Day Ceremony, courtesy of Michael Kogan's paleophilatelie.eu.



Acknowledgements:

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Selected References:

Anonymous, 2008, Greenland Collector, N.2 issue

[has a discussion of the 2008 Prehistoric Life issues – English version available here:

http://www.paleophilatelie.eu/images/details/stamps/official/greenland/2008/GC_GB_0802.pdf]

Benton, M.J. (Ed.) 2020. Cowen's History of Life, 6th Edition, Wiley-Blackwell, 400 p.

Eichler, V. 2017. Amphibians on Postage Stamps – A thematic coverage and checklist, American Topical Association Handbook 165, 97 p. (the digital version has excel and pdf spreadsheets that do list several prehistoric amphibians as well as several more recently extinct species. The text also has a very nice treatment of modern amphibians.).

Ernst, H.-U. 2015. Fossil-Darstellungen von Fröschen in der Philatelie, Glückauf, v. 126, p. 72-75 [has discussion of several issues showing frogs including the Chinese Postal cards from 2003 and 2007]

Michael Kogan's Paleophilatelie page, <http://www.paleophilatelie.eu/>

Stanley, S.M. and Luczaj, J.A. 2014, Earth System History, 4th edition, W.H. Freeman Press, 624 p.

Ton Van Eijden's Stampedout.nl webpage

