

The Amphibians and Reptiles of the 1962–1965 Yale University Prehistoric Expedition to Nubia

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ABSTRACT

The Yale University Prehistoric Expedition to Nubia collected zoological specimens and archaeological artifacts from Egypt and the surrounding region from 1962 to 1965. A total of 2486 herpetological specimens were collected during this time, representing 51 species and 13 families. Among the herpetological specimens is a series of 1232 *Chalcides ocellatus* and a recently described species of spitting cobra (*Naja nubiae*). Because most of the collection sites are now under Lake Nasser, most specimens represent extirpated populations. Some specimens are of taxa now considered endangered species in Egypt. Although the primary purpose of the YUPEN expedition was to preserve the rich anthropological history south of Aswan, the herpetological specimens that were preserved provide a valuable temporal snapshot into the historical ecosystems that were present in Lower Egypt.

KEYWORDS

Egypt, reptile, amphibian, Aswan Dam, Nubia, *Chalcides*, *Naja*

Introduction

The history of basin irrigation on the Nile River is believed to extend back to at least around 5100 bp (Dumont 2009; Williams and Talbot 2009), though it was not until the early 20th century that major changes in hydrology would take place. Driven by the growing Egyptian population's demand for water, the Aswan High Dam project of the 1950s and early 1960s proposed to create a permanent reservoir beginning near the Nile River's first cataract, replacing a smaller dam built by the British in 1902. This project would ultimately create Lake Nasser (Figure 1), a reservoir 510 km long and 35 km wide holding approximately 85 billion m³ of water with a 3.6 km dam

(Gohary 1998; Dumont 2009). The Aswan High Dam was to be built in stages, with the first phase scheduled for completion in 1964 and the filling of the reservoir to begin simultaneously with the next stage of construction (Kadry 1983). Archeologists around the world raised concerns over the planned submergence of the Nubian portion of the Nile River valley, which contained many temples, settlements and prehistoric sites (Figures 1 and 2). Salvage and rescue operations coordinated by the United Nations Educational, Scientific and Cultural Organization (UNESCO) began in 1960, mobilizing archeological teams from 50 countries to move, salvage or document as many items as possible (Rainey 1960; Kadry 1983; Gohary 1998; Hassan 2007).



FIGURE 1. The governorates of Egypt.

The United States Department of State helped fund salvage operations by several U.S. institutions during this period, including Yale University, which organized three archeological salvage expeditions from 1961 to 1965. The primary goal of these expeditions was to survey and salvage archeological materials from the floodplain of the Nile River valley before water inundated the sites.

While the focus of the expeditions was on archeological remains, the prominence of natural history in ancient Egyptian culture led some expedition leaders to include specimen collection in their salvage operations. These collectors gathered representative specimens in the valley to provide some context to the interpretation of zooarcheological items. Much of the material was

deposited at Yale's Peabody Museum of Natural History (YPM).

These zoological specimens are important in the context of Egyptian culture. The ancient Egyptians revered elements of their natural world and incorporated many animals into their panoply of gods and symbols of authority, including many reptiles and amphibians (Budge 1934). For example, Sebek (or Sobek) the crocodile god was worshipped in the Fayyum region well into the third century despite Roman occupation (Robinson 1932; Frankfurter 1998). In this region, particularly at Kom Ombo, living crocodiles (*Crocodylus niloticus*), as incarnations of gods were kept and housed in temples by priests until the animals' deaths, when they would be mummified (Verhoogt and Menches 1998). Mummified crocodiles (such as YPM HERANT 021829 and ANT 006905) have been recovered from several Egyptian cemeteries and tombs, with more than 1000 mummified crocodiles found in the necropolis of Teptunis alone, many stuffed with papyrus texts (Verhoogt and Menches 1998). In addition to crocodilians, mummified snakes and lizards are known from sites throughout Egypt (Ikram 2005). The sun god Ra (or Re) is another notable example of a reptilian deity, symbolized by one or two cobras wrapped around, or on, either side of a solar disc (Armour 1986), leading to the subsequent use of spitting cobras in the crowns of many pharaohs of the Middle Kingdom and Kushite kings (Fisher 1976; Brooks-Bertram 1994; King 1994).

This integration of reptiles and amphibians with ancient Egyptian culture is reflected in investigations of Egyptian history dating back to the works of Herodotus (Cary 1885) and Pliny the Elder (Bostock and Riley 1893), which included accounts of the natural history of the area's herpetological fauna. Discussions of Egyptian natural history continue in contemporary historical and literary works (see Griffiths 1961; Kinghorn 1994), underscoring the importance of Egypt's reptilian and amphibian fauna in our understanding of pharaonic culture. Egypt has at least 118 reptile and amphibian species (Baha El Din 2006) and, not surprisingly, this diversity is reflected in the roles of the lesser gods, such as Sheta or Apesh the turtle-god, Urt-hekau the cobra-goddess of magical spells, Aapep the serpent symbolizing

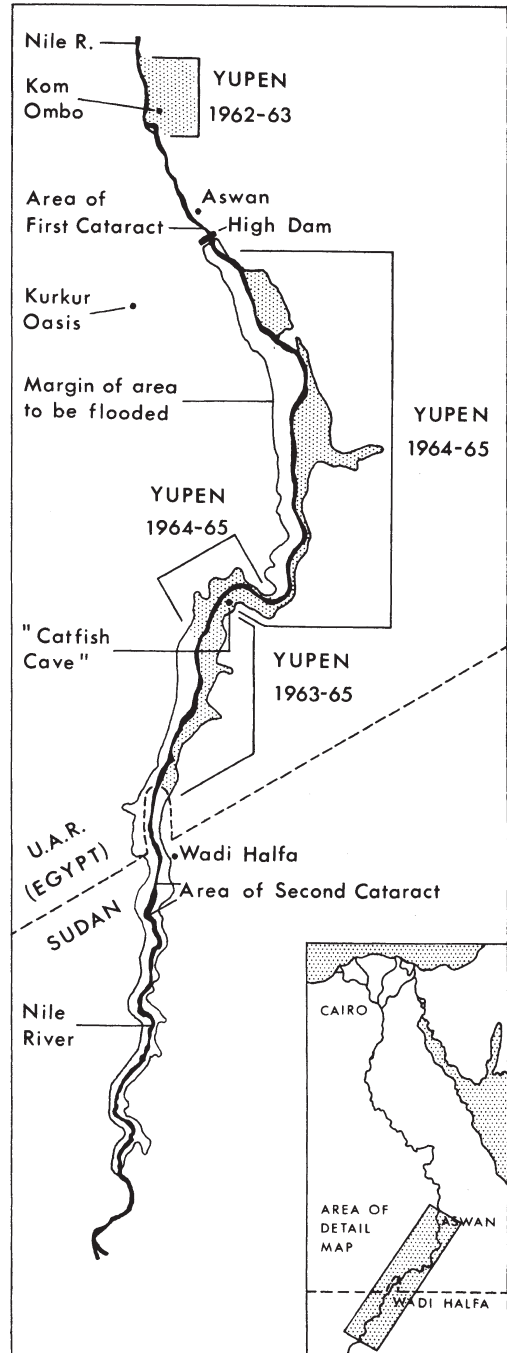


FIGURE 2. Map of the Nile River highlighting locations of archeological sites, including temples, sampled by the Yale University Prehistoric Expedition to Nubia (YUPEN) both within and outside of the Aswan region. (Reed 1966:17, fig. 1; © 1966 Peabody Museum of Natural History, Yale University).

chaos, and Heqet the frog-goddess symbolizing fertility (Budge 1934).

Of the three expeditions organized by Yale, it is fitting that the one that collected the most herpetological specimens was the Yale University Prehistoric Expedition to Nubia (YUPEN) from 1962 to 1965, directed by Charles A. Reed (1964, 1966), a vertebrate zoologist and curator of herpetology at the Yale Peabody Museum at the time. Reed brought undergraduate and graduate students along as archeological assistants and natural history collectors in successive years of the expedition, among them Thomas Lovejoy III and Egbert Leigh in 1962 and 1963, and Chris Maser and David Crockett in 1963 and 1964. Archaeologist David Boloyan was member of that expedition for both the 1962/63 and 1963/64 field seasons. A medical zoologist from the U.S. Navy Medical Research Unit in Cairo, Ibrahim Helmy, also collected specimens and later wrote on the mammals of Egypt (Osborn and Helmy 1980).

The joint University of Pennsylvania–Yale University Expedition to Egypt (also known as the Pennsylvania–Yale Expedition) ran from 1961 to 1965, under the direction of William Kelly Simpson (Simpson 1962, 1964, 1965). Simpson hired Yale undergraduate Charles Seymour III as a general field assistant to be responsible for most of the animal collections. In the latter part of the 1965 field season both Simpson's and Reed's expeditions joined forces to collect specimens. Simpson's assistant director for the Pennsylvania–Yale Expedition, Nicholas B. Millet, was subsequently selected to lead the third expedition (dubbed Gebel Adda) for the 1963–1964 field season and onward (see Millet 1964, 1967). Millet published several papers on this expedition (Millet 1964, 1967) and completed his dissertation at Yale a few years later (Millet 1968).

While several papers documenting the archeology of these expeditions have been published (see Simpson 1962, 1965; Millet, 1964, 1967; Reed 1964, 1966), a catalog of the herpetological specimens collected at that time has never been compiled. These records are of special importance, because most of the specimens deposited in the Yale Peabody Museum were collected during salvage expeditions from the now flooded sites above the Aswan Dam. Although Egypt has experienced more than 400 years of scholarly interest in the natural history of its fauna (e.g., Belon

1588; Hasselquist 1757; Forskål 1775; Geoffroy Saint-Hilaire 1827; Anderson 1896, 1898; Fowler 1914; Flower 1933; Marx 1968; Saleh 1997; Baha El Din 2006), few published reports focus on the Aswan region.

A notable exception is Baha El Din's (2006) recent work, which is a major achievement in our understanding of how this diverse fauna occupies the complex Egyptian landscape. This publication effectively couples decades of expert field observations with more than ten thousand specimen-based distributional records reflecting up-to-date taxonomy. Baha El Din (2006) did use Yale Peabody Museum specimen data, but did not have the opportunity to re-examine most, if any, of the specimens within the collection. As a result, the identification of most of the YPM specimens was preliminary and has never been verified. Our recent efforts to re-curate these specimens revealed that more than 30% of all specimens has been misidentified at the species, genus or even family level.

Here we present a catalog of collected herpetological specimens from Yale's three expeditions to Egypt during the construction of the Aswan Dam. Many of the herpetological specimens listed were collected from areas that are currently flooded, thereby providing valuable information on the distribution of these now extirpated populations. Moreover, as the completion of the dam is directly associated with the spread of wetland habitats along most of the Nile River, many of these specimens provide insights into the responses of these species to rapid ecological changes. This is important, because understanding the dynamics underlying the spatial distribution of any population provides essential information for further studies in conservation biology, ecology and biogeography.

Materials and Methods

This project is part of a project funded by National Science Foundation to re-curate the fluid-preserved specimens in the collections of the YPM Division of Vertebrate Zoology. The re-curation procedure provided us with the opportunity to examine all specimens from the three Egyptian expeditions. Species identifications were first verified and updated to the taxonomy presented in Baha El Din (2006). Several published

taxonomic revisions affect genus and family terms for the taxa involved. However, some of these revisions are not yet widely used. In such cases we list the new term parenthetically. Such parenthetical terms for Amphibia follow Frost (1998–2010). For Reptilia we follow Uetz (1995–2010). Additional references used for identification and verification included Leviton et al. (1992), Schleich et al. (1996) and Disi et al. (2001). Three of the authors (Dornburg, Hawlena and Watkins-Colwell) provided species identifications, with Aaron Bauer (Villanova University, Pennsylvania, USA) and Bill Branch (Port Elizabeth Museum, South Africa) furnishing additional verifications.

For each specimen, we cross-referenced the original field numbers with the original expedition field notebooks to verify locality of origin, collection date and other details. Localities, as listed in the original field notebooks, were georeferenced, or had coordinates verified, by Dornburg and Watkins-Colwell). Some sites had also been georeferenced as part of HerpNet (2003) using MaNIS/HerpNet/ORNIS georeferencing methods (Chapman and Wieczorek 2006) and have latitude and longitude data with associated error radius (Table 1).

Distribution Records

ANURA: BUFONIDAE
Bufonidae: species unknown

Governorate records. *Aswan Governorate*, Amada Temple, YPM HERA 000866 (lot count 2; Gosner 46), collector Reed, C. A., 16 January 1963. *Matruh Governorate*, Bahig, YPM HERA 000885 (lot count 3; Gosner 43), collector Lovejoy, T. E., 8 October 1962. Also collected by T. E. Lovejoy from Bahig on 8 October 1962: YPM HERA 005101–005105, 005107, 005108, 005110, 005113 (lot count 1 for each; Gosner 45), 009579 (lot count 3; Gosner 41), 009580 (lot count 7; Gosner 39), 009581 (lot count 4; Gosner 34–36), 009582 (lot count 1; Gosner 28–30). *Matruh Governorate*, Bahig, YPM HERA 000886 (lot count 2; Gosner 42), collector Lovejoy, T. E., 9 October 1962. All larval stages follow Watkins-Colwell and Leenders (2004).

Bufo (Amietophrynus) kassasii
(Baha El Din, 1993)
Nile Valley Toad

Governorate records. *Matruh Governorate*, Bahig, 3 miles W of Bahig RR Station, YPM HERA 005087, 005085, collector Lovejoy, T. E., 9 October 1962. Also from Bahig, collected by T. E. Lovejoy on 8 October 1962: YPM HERA 005100, 005106, 005109, 005111, 005117.

Bufo (Amietophrynus) regularis
(Reuss, 1834)
Egyptian Toad

Governorate records. *Aswan Governorate*, Amada Temple, YPM HERA 000865 collector Reed, C. A., 16 January 1963. Dakka Temple, 3 km NE of Dakka, YPM HERA 000852, 000856, collector Reed, C. A., 13 January 1963. Amada Temple, 200 m downstream, YPM HERA 000864, collector Reed, C. A., 15 January 1963. Also collected by C.A. Reed from same locality: YPM HERA 000860, 000863. Toshka-Arminna Toshka-Arminna, East Pumping Station, YPM HERA 1249, collector Maser, C., 5 March 1963. Also from same locality: YPM HERA 001247, collector Seymour, C., 17 March 1964. Kom Ombo, El-Biyara, YPM HERA 000868, collector Lovejoy, T. E., 19 November 1962. Also collected from Kom Ombo, El-Biyara by T. E. Lovejoy on 19 November 1962: YPM HERA 000869–000872, 000874. Kalabsha, YPM HERA 000847, 000849, collector Reed, C. A., 3 January 1963. Kalabsha gorge, 5 km N of Kalabsha, YPM HERA 000867, collector Reed, C. A., 1 February 1963. Corosco, YPM HERA 000956, collector Boloyan, D. S., 10 April 1964. Also collected from Corosco by D.S. Boloyan on 10 April 1964: YPM HERA 000948, 000950–000953, 000957–000959, 000961–000968, 000970–000974. *Giza Governorate*, Imbaba, above Abu Rawash, YPM HERA 000998 collector, Maser, C., November 1963. Also collected above Abu Rawash by C. Maser in November 1963: YPM HERA 000996, 000997, 000999, 001000. Imbaba, Abu Rawash, YPM HERA 001156, 001157, collector Maser, C., November 1963. Also collected during November 1963 by C. Maser in Abu Rawash: YPM HERA 001155, 001159–001163, 001245, 001246. *Matruh Governorate* Bahig, YPM HERA 005112, collector Lovejoy, T. E., 8 October 1962. Also from Bahig: YPM HERA 005115, collector Lovejoy, T. E., 8 October 1962.

Bufo (Pseudepidalea) viridis (Laurenti, 1768)
Green Toad

Governorate records. *Aswan Governorate*, Amada Temple, 200 m downstream, YPM HERA 000862 collector Reed, C. A., 15 January 1963. Corosco, YPM HERA 000949, 000954, 000955, 000960, 000969, collector Boloyan, D. S., 10 April 1964. Dakka Temple, 3 km NE of Dakka, YPM HERA 000854 collector Reed, C. A., 13 January 1963. Also collected from Dakka temple on 13 January 1963 by C. A. Reed: YPM HERA 000853, 000855. El-Sibua, S of temple, YPM HERA 000857, collector Reed, C. A., 14 January 1963. Also collected from El-Sibua by C. A. Reed in January 1963: YPM HERA 000858, 000859. Kalabsha, YPM HERA 000848, collector Reed, C. A., 3 January 1963. Also collected in Kalabsha by C. A. Reed on 3 January 1963: YPM HERA 000851, 000850. Toshka-Arminna, Arminna East Pumping Station, Area 1, YPM HERA 001248, collector Seymour, C., 17 March 1964. *Giza Governorate*, Imbaba, Abu Rawash, YPM HERA 000995, 001158, 001164, collector Maser, C., November 1963. *Matruh Governorate*, Bahig, 3 miles W of Bahig RR Station, YPM HERA 005093, collector Lovejoy, T. E., 9 October 1962. Also collected by T. E. Lovejoy on 9 October 1962 at same locality: YPM HERA 005086, 005088, 005089, 005090–005092, 005094–005099. Bahig, YPM HERA 000840, collector Lovejoy, T. E., 26 October 1962. Also collected by

TABLE 1. Latitude and longitude data for YUPEN collection sites. Coordinates for sites where structures, including some temples, were moved to escape flooding caused by the Aswan High Dam are for locations that may now be under water. Some coordinates are from HerpNet (2003) and have a radius provided as both a numeric and a verbatim value (in miles).

Collection site	Description	Latitude	Longitude
<i>Alexandria Governorate</i>			
El Amiriya		31.083	29.8
<i>Aswan Governorate</i>			
Abu Simbil ^a		22.367	31.633
Amada Temple ^a	200 m downstream	22.717	32.25
Amada Temple ^a		22.717	32.25
Toshka-Arminna ^a	Arminna East Pumping Station: Area 1	22.517	31.867
Toshka-Arminna ^a	Arminna East Pumping Station:	22.517	31.867
Toshka-Arminna ^a	Near Arminna Temple	22.517	31.867
Toshka-Arminna ^a	S of Arminna	22.517	31.867
Toshka-Arminna ^a	Arminna East Pumping Station: Area 3	22.517	31.867
Dakka Temple	3 km NE of Dakka	23.183	32.767
El-Marrale ^a	“El Marrale”; “West Temple Qurta”	23.227	32.769
El- (Al-) Sibua ^a	“about 50 miles west of El Sibua temple”	22.759	31.769
El- (Al-) Sibua ^a	El-Sibua, S of Temple	22.761	32.554
Ballana ^a		22.267	31.6
Gebel Adda ^a	Across river from Ballana	22.267	31.6
Ballana Island ^a		22.267	31.6
Gebel Adda ^a		22.3	31.6
Gebel Adda ^a	3 km S of Gebel Adda	22.233	31.6
Gebel Adda ^a	E bank of Nile	22.3	31.6
Kalabsha ^a		22.55	32.867
Kalabsha ^a	Gorge 5 km N of Kalabsha	23.6	32.85
Kalabsha ^a	Beit el-Wali Temple	22.55	32.867
Khor Rahma ^a	“east bank”; “Khor Rahma”	23.6	32.9
Kom Ombo	El-Biyara	24.467	32.95
Kom Ombo	Water pumping station	24.467	32.95
Kom Ombo	5 km E Kom Ombo Temple	24.467	32.95
Kom Ombo	10 miles NE of Kom Ombo	24.567	33.05
Kom Ombo	1 mile NNW of Kom Ombo pumping station	24.467	32.95
Kom Ombo	El Muneiha	24.467	32.95
Kom Ombo		24.467	32.95
Kom Ombo	Kom Ombo Temple	24.467	32.95
Derr ^a	Derr Temple, between Korosha and Inieba	22.711	32.209
Nag Misaw ^a		22.367	31.7
Nag Misaw ^a	Abu Simbel East	22.367	31.7
Red Sea ^b	Red Sea coast	24.464202	35.170867
Temple Qertassi (Gurtas) ^a	N of Temple Gurtas	23.673455	32.8965
Temple Hussain ^a	“above temple Hussain”	23.383	32.893
Kurusku (Corosco) ^a		22.605	32.311
Qustul ^a	South Qustul West	22.271	31.587
Qustul ^a	Qustal West, S end of district	22.271	31.587
Sayala (Seiyala) ^a	Sayala, W bank	23	32.65
<i>Asyut Governorate</i>			
Asyut		29.233	31.117

Continued

TABLE 1 CONTINUED

Collection site	Description	Latitude	Longitude
<i>Beheira Governorate</i> Khataba		30.35	30.817
<i>Beni Suef Governorate</i> El-Wasta	Abu Sir el-Malagiel	29.333	31.2
<i>Cairo Governorate</i> Cairo	Garden City House	30.05	31.25
Cairo	Near Cairo	30.05	31.25
Imbaba	El-Bukkari, Minshat	30.083	31.217
<i>Faiyum Governorate</i> El-Fayyum		29.317	30.8
El-Fayyum	Tamiya	29.483	30.95
<i>Giza Governorate</i> Imbaba	“Abu Rawash”	30.083	31.2
Imbaba	“above Abu Rawash”	30.083	31.2
<i>Giza or Maturah Governorate</i> Abu Rawash or Bahig	Northern Egypt	30.083 or 30.933	31.2 or 29.533
<i>Matruh Governorate</i> Bahig	Includes “Bahig,” “Berg el Arab” and “west of Bahig”	30.933	29.583
Bahig	3 miles W of Bahig RR Station	30.933	29.533
<i>Northern Province Governorate</i> Second Cataract ^c	E bank of Nile, Sharta, 17 km S of Wadi Halfa	21.6	31.2
<i>Port Said Governorate</i> Port Said		31.267	32.3
<i>Red Sea Governorate</i> Mersa Alam	Red Sea coast	24.073	34.892
St. Anthony Monastery		28.933	32.35
Wadi Yassen ^d	Wadi Yassen	25.9705	33.4319

^a Collection sites that may now be flooded.

^b Original records for this site are “Aswan Governorate: Red Sea Coast,” yet the Red Sea does not border the Aswan Governorate (coordinates are from HerpNet [2003] and include a verbatim radius of 244.009 miles).

^c The “Second Cataract” site was not within Egypt, but rather in Sudan.

^d Wadi Yassen coordinates are from HerpNet (2003), with a verbatim radius of 240.009 miles.

T. E. Lovejoy in Bahig on 26 October 1962: YPM HERA 000841–000846. Also from Bahig: YPM HERA 005114, 005116, 005118, collector Lovejoy, T. E., 8 October 1962.

ANURA: RANIDAE

Ptychadena mascareniensis
(Duméril and Bibron, 1841)
Mascarene Ridged Frog

Governorate records. *Faiyum Governorate*, El-Faiyum, YPM HERA 000910, collector Maser, C., 5 November 1963. *Giza Governorate*, Imbaba, Abu Rawash, YPM HERA 000914, collector Maser, C., 10 November 1963. *Unknown Governorate*, YPM HERA 000994, collector Maser, C., November 1963.

Rana bedriagae (Camerano, 1882)
Levant Green Frog

Governorate records. *Giza Governorate*, Imbaba, Abu Rawash, YPM HERA 000911, collector Maser, C., 10 November 1963. Also collected by C. Maser on 10 November 1963 at Abu Rawash: YPM HERA 000912, 000913, 000915–000921. *Unknown Governorate*, YPM HERA 000975–000993, collector C. Maser, November 1963.

SQUAMATA: AGAMIDAE

Laudakia stellio (Linnaeus, 1758)
Starry Agama

Governorate records. *Alexandria Governorate*, El-Amiriya, YPM HERR 004889, collector Maser, C., 10 November 1963. Also collected by C. Maser on 10 November 1963 in El-Amiriya: YPM HERR 004880–004888, 004890–004901. *Aswan Governorate*, Kom Ombo, YPM HERR 003970, 003971, collector Helmy, I., 22 April 1963. *Matruh Governorate*, Bahig, W of Bahig, YPM HERR 003871, collector Helmy, I., 15 October 1962. Also collected W of Bahig by I. Helmy on 15 October 1962: YPM HERR 003868–003870, 003872. *Unknown Governorate*, northern Egypt (either Giza Governorate: Imbada, Abu Rawash, or Matruh Governorate: Bahig), YPM HERR 005323–005329, 005367–005382, collector C. Maser, November 1963.

Pseudotrapelus sinaita (Heyden, 1827)
Sinai Agama

Governorate records. *Aswan Governorate*, Toshka-Arminna, East Pumping Station, YPM HERR 005268, collector Seymour, C., 13 March 1964. Gerf Hussein, above temple, YPM HERR 003882, collector Reed, C. A., 13 January 1963. Wadi Corosco, YPM HERR 006896, 006897, collector Walter, H., 10 April 1964.

Trapelus mutabilis (Merrem, 1820)
Changeable Agama

Governorate records. *Aswan Governorate*, Kom Ombo, YPM HERR 003974, collector Helmy, I., 22 April 1963. *Matruh Gov-*

ernorate, Bahig, YPM HERR 003873–003881, collector Lovejoy, T. E., 8 October 1962. *Unknown Governorate*, northern Egypt (either Giza Governorate: Imbada, Abu Rawash, or Matruh Governorate: Bahig), YPM HERR 005355–005366, collector Maser, C., November 1963.

Uromastix ocellata (Lichtenstein, 1823)
Ocellated Dabb Lizard

Governorate records. *Sudan, Northern Province*, Nubia, second cataract E bank of Nile: Sharta, 17 km S of Wadi Halfa, YPM HERR 005060, collector Seymour, C. and Mathiasson, S., 2 April 1964.

SQUAMATA: CHAMAELEONIDAE

Chamaeleo chamaeleon (Linnaeus, 1758)
Common Chamaeleon

Governorate records. *Matruh Governorate*, Bahig, YPM HERR 005265–005266, collector Lovejoy, T. E., 4 October 1962. Also collected in Bahig by T. E. Lovejoy: YPM HERR 079945, October 1962.

SQUAMATA: COLUBRIDAE

Macroprotodon cucullatus (Geoffroy, 1827)
Hooded Snake

Governorate records. *Alexandria Governorate*, El-Amiriya, YPM HERR 005231, collector Maser, C., 10 November 1963. Also from El-Amiriya: YPM HERR 005237, collector Maser, C., 5 December 1963.

Malpolon monspessulanus
(Hermann, 1804)
Montpellier Snake

Governorate records. *Alexandria Governorate*, El-Amiriya, YPM HERR 005219–005230, collector Maser, C., 10 November 1963. Also from El-Amiriya: YPM HERR 005235, 005236, collector Maser, C., 5 December 1963. *Matruh Governorate*, Bahig, Berg el-Arab, YPM HERR 004052, collector Helmy, I., 22 April 1963.

Platycephalus florulentus (Geoffrey, 1827)
Flowered Racer

Governorate records. *Aswan Governorate*, Toshka-Arminna, Toshka-Arminna East Pumping Station, YPM HERR 005255, collector Seymour, C., 3 March 1964. Ballana Island, YPM HERR 005254, collector Maser, C., 13 February 1964. *Giza Governorate*, Imbaba, Abu Rawash, YPM HERR 005670, 005671, collector Maser, C., 25 November 1963. *Unknown Governorate*, northern Egypt (either Giza Governorate: Imbada, Abu Rawash, or Matruh Governorate: Bahig), YPM HERR 005580–005582, collector Maser, C., November 1963.

Platyceps saharicus
(Schätti and McCarthy, 2004)
Saharan Cliff Racer

Governorate records. *Aswan Governorate*, Nag Misaw Abu Simbel East, YPM HERR 005256, collector Seymour, C., 28 February 1964.

Psammophis aegyptius (Marx, 1958)
Saharan Sand Snake

Governorate records. *Alexandria Governorate*, El-Amiriya, YPM HERR 005232, 005233, collector Maser, C., 10 November 1963. *Aswan Governorate*, Gebel Adda, 3 km S of Gebel Adda, YPM HERR 005258, collector Maser, C., 24 January 1964. *Giza Governorate*, Imbaba, Abu Rawash, YPM HERR 005238, collector Maser, C., 10 November 1963. *Matruh Governorate*, Bahig, Berg el-Arab, YPM HERR 004053, collector Helmy, I., 22 April 1963.

Psammophis sibilans (Linnaeus, 1758)
African Beauty Snake

Governorate records. *Giza Governorate*, Imbaba, Abu Rawash, YPM HERR 005211–005218, collector Maser, C., 10 November 1963. Also collected by C. Maser from Imbaba, Abu Rawash on 10 November 1963: YPM HERR 005239–005253. Also collected by C. Maser in Imbaba, Abu Rawash: YPM HERR 005672–005682, 25 November 1963. *Matruh Governorate*, Bahig, YPM HERR 005211, collector Maser, C., 13 November 1963. *Unknown Governorate*, northern Egypt (either Giza Governorate: Imbada, Abu Rawash, or Matruh Governorate: Bahig) YPM HERR 005583–005602, collector Maser, C., November 1963.

SQUAMATA: ELAPIDAE
Naja haje (Linnaeus, 1758)
Egyptian Cobra

Governorate records. *Cairo Governorate*, near Cairo, YPM HERR 005272, collector Maser, C., November 1963.

Naja nubiae
(Wüster and Broadley, 2003)
Nubian Spitting Cobra

Governorate records. *Aswan Governorate*, Kom Ombo, El-Biyara, YPM HERR 003916 (holotype), collector Lovejoy, T. E., 21 November 1962. *Asyut Governorate*, Asyut, YPM HERR 005210 (paratype), collector Maser, C., 11 December 1963.

SQUAMATA: GEKKONIDAE
Hemidactylus turcicus
(Linnaeus, 1758)
Turkish Gecko

Governorate records. *Alexandria Governorate*, El-Amiriya, YPM HERR 004990, collector Maser, C., 10 November 1963.

Aswan Governorate, Toshka-Arminna, Toshka-Arminna East Pumping Station Area 1, YPM HERR 006795. Gebel Adda, E bank of Nile, YPM HERR 006797–006800 collector Maser, C., 20 January 1964. Also collected by C. Maser in Gebel Adda: YPM HERR 006796, 23 January 1964; YPM HERR 006805, 2 February 1964. *Unknown Governorate*, northern Egypt (either Giza Governorate: Abu Rawash: Imbada, or Matruh Governorate: Bahig) YPM HERR 005487, 005488, collector Maser, C., November 1963.

Ptyodactylus guttatus (Heyden, 1827)
Spotted Fan-toed Gecko

Governorate records. *Giza Governorate*, Imbaba, Abu Rawash, YPM HERR 005631, collector Maser, C., 25 November 1963.

Ptyodactylus hasselquistii
(Donndorff, 1798)
Egyptian Fan-toed Gecko

Governorate records. *Aswan Governorate*, Kom Ombo, 5 km E of Kom Ombo Temple, YPM HERR 003896, collector Lovejoy, T. E., 27 November 1962. Kalabsha Beit el-Wali Temple, YPM HERR 003893, collector Reed, C. A., 13 January 1963. Kalabsha, YPM HERR 003883, collector Reed, C. A., 13 January 1963. Gebel Adda YPM HERR 006834, 006835, 006837, 006838, collector Maser, C., 20 January 1964. Nag Misaw, YPM HERR 005259–005264, collector Seymour, C., 22 February 1964. *Cairo Governorate*, Cairo Garden City House, YPM HERR 004878, collector Maser, C., 29 October 1963. *Unknown Governorate*, YPM HERR 006836, collector Maser, C.

Stenodactylus mauritanicus
(Guichenot, 1850)
Northern Elegant Gecko

Governorate records. *Aswan Governorate*, Kom Ombo, YPM HERR 003979. *Unknown Governorate*, northern Egypt (either Giza Governorate: Imbada, Abu Rawash, or Matruh Governorate: Bahig), YPM HERR 005489, collector Maser, C., November 1963. Also collected by C. Maser in November 1963: YPM HERR 005492, 005493.

Stenodactylus petrii (Anderson, 1896)
Sand Gecko

Governorate records. *Matruh Governorate*, Bahig, YPM HERR 003885, collector Lovejoy, T. E., 8 October 1962. Also from Bahig: YPM HERR 003886, 005209, collector Maser, C., 13 November 1963.

Stenodactylus sthenodactylus
(Lichtenstein, 1823)
Elegant Gecko

Governorate records. *Aswan Governorate*, Kom Ombo, 10 miles NE of Kom Ombo, YPM HERR 003908, collector Reed, C. A., 22 November 1962. Amada Temple, YPM HERR 003889,

collector Reed, C. A., 16 January 1963. *Red Sea Governorate*, Wadi Yassen, YPM HERR 006802, collector Maser, C., 25 October 1963. *Unknown Governorate*, northern Egypt (either Giza Governorate: Imbada, Abu Rawash, or Matruh Governorate: Bahig), YPM HERR 005490, 005491, collector Maser, C., November 1963.

Tarentola annularis (Geoffrey, 1827)
Egyptian Gecko

Governorate records. *Aswan Governorate*, El-Sebua, S of Temple, YPM HERR 003894, collector Reed, C. A., 14 January 1963. Toshka-Arminna, near Toshka-Arminna Temple, YPM HERR 003891, collector Lovejoy, T. E., October 1962. Amada Temple YPM HERR 003887, 003888, collector Reed, C. A., 16 January 1963. E bank, Khor Rahma, YPM HERR 005270, collector Seymour, C., 16 January 1964. Nag Misaw, YPM HERR 005269, collector Seymour, C., 16 February 1964. *Matruh Governorate*, Bahig, YPM HERR 005059, collector Maser, C., 13 November 1963. *Port Said Governorate*, Port Said, YPM HERR 003895, collector Lovejoy, T. E., 8 November 1962. *Unknown Governorate*, northern Egypt (either Giza Governorate: Abu Rawash: Imbada, or Matruh Governorate: Bahig), YPM HERR 005429, 005494, collector Maser, C., November 1963. *Sudan, Northern Province*, Nubia, second cataract E bank of Nile: Sharta, 17 km S of Wadi Halfa, YPM HERR 004879, collector Seymour, C., 2 April 1964.

Tarentola mauritanica (Linnaeus, 1758)
Moorish Gecko

Governorate records. *Alexandria Governorate*, El-Amiriya YPM HERR 004902–004963, 004991, 004992, collector Maser, C., 10 November 1963. *Cairo Governorate*, Imbaba, Abu Rawash, Inieba, YPM HERR 005053–005056, collector Maser, C., 10 November 1963. *Matruh Governorate*, Bahig, YPM HERR 007995, collector Lovejoy, T. E., 8 October 1962. Also collected in Bahig by T. E. Lovejoy: YPM HERR 007996, 3 October 1962. *Unknown Governorate*, northern Egypt (either Giza Governorate: Imbada, Abu Rawash, or Matruh Governorate: Bahig), YPM HERR 005383–005428, collector Maser, C., November 1963; YPM HERR 003890, collector Helmy, I., October 1962.

Tropicolotes nattereri
(Steindachner, 1901)
Natterer's Pigmy Gecko

Governorate records. *Aswan Governorate*, N of Temple Qertassi (Gurtas), YPM HERR 003907, collector Reed, C. A., 13 January 1963.

Tropicolotes steudneri
(Peters, 1869)
Steudner's Pigmy Gecko

Governorate records. *Aswan Governorate*, Gebel Adda, YPM HERR 006803, collector Maser, C., 28 January 1964. Also col-

lected from Gebel Adda by C. Maser: YPM HERR 006804, 23 January 1964. *Red Sea Governorate*, Wadi Yassen, YPM HERR 006801, collector Maser, C., 25 October 1963. *Unknown Governorate*, YPM HERR 006807.

SQUAMATA: LACERTIDAE
Acanthodactylus boskianus
(Daudin, 1802)
Bosc's Lizard

Governorate records. *Alexandria Governorate*, El-Amiriya, YPM HERR 004987, collector Maser, C., 10 November 1963. *Cairo Governorate*, Imbaba Abu Rawash, Inieba, YPM HERR 005050–005052, 005057, collector Maser, C., 10 November 1963. Also collected by C. Maser from Inieba: YPM HERR 004818–004843, 1 December 1963; YPM HERR 004182, 17 December 1963. *Giza Governorate*, Imbaba, Abu Rawash, YPM HERR 005621–005630, 005668, collector Maser, C., 25 November 1963. *Matruh Governorate*, Bahig, YPM HERR 005200–005207, collector Maser, C., 13 November 1963. *Red Sea Governorate*, Mersa Alam, Red Sea coast, YPM HERR 0017549, collector Giegengack, R. F., 3 May 1964. *Unknown Governorate*, northern Egypt (either Giza Governorate: Imbada, Abu Rawash, or Matruh Governorate: Bahig), YPM HERR 005430–500471, collector Maser, C., November 1963.

Acanthodactylus longipes
(Boulenger, 1918)
Long-footed Lizard

Governorate records. *Unknown Governorate*, YPM HERR 006808, collector Maser, C., 1963; YPM HERR 006806, collector Maser, C., 1964.

Acanthodactylus pardalis
(Lichtenstein, 1823)
Egyptian Leopard Lizard

Governorate records. *Alexandria Governorate*, El-Amiriya, YPM HERR 004986, collector Maser, C., 10 November 1963. *Aswan Governorate*, Kom Ombo, YPM HERR 003975, 003976, collector Helmy, I., 22 April 1963. *Matruh Governorate*, Bahig, YPM HERR 005691–005720, collector Lovejoy, T. E., 6 October 1962. Also collected by T. E. Lovejoy in Bahig: YPM HERR 005729, 005730, October 1962; YPM HERR 007997, 5 October 1962. *Unknown Governorate*, northern Egypt (either Giza Governorate: Imbada, Abu Rawash, or Matruh Governorate: Bahig), YPM HERR 005474, collector Maser, C., November 1963. Also collected by C. Maser in November 1963: YPM HERR 005481–005483, 005496–005534.

Acanthodactylus scutellatus
(Audouin, 1829)
Nidua Lizard

Governorate records. *Aswan Governorate*, Kom Ombo, 1 mile N by NW of Kom Ombo pumping station, YPM HERR

003914, collector Lovejoy, T. E., 20 November 1962. Toshka-Arminna, S of Toshka-Arminna, YPM HERR 003897–003906, collector Lovejoy, T. E., 17 January 1963. Temple 50 miles W of El-Sebua, YPM HERR 003911, collector Reed, C. A., 15 January 1963. Gebel Adda, YPM HERR 006842–006844, collector Reed, C. A., 20 January 1964. *Cairo Governorate*, Imbaba, Abu Rawash, Inieba, YPM HERR 004844, collector Maser, C., 1 December 1963. *Unknown Governorate*, northern Egypt (either Giza Governorate: Imbada, Abu Rawash, or Matruh Governorate: Bahig), YPM HERR 005478–005480, 005484–005486, collector Maser, C., November 1963; YPM HERR 003912.

Mesalina guttulata (Lichtenstein, 1823)
Small-spotted Lizard

Governorate records. *Aswan Governorate*, Gebel Adda, YPM HERR 006840, 006841, collector Maser, C., 20 January 1964. Also collected by C. Maser in Gebel Adda: YPM HERR 006845, 21 January 1964. *Red Sea Governorate*, St. Anthony Monastery, YPM HERR 004875, collector Maser, C., 26 October 1963. *Unknown governorate*, YPM HERR 003910, 006831.

Mesalina olivieri (Audouin, 1829)
Olivier's Lizard

Governorate records. *Alexandria Governorate*, El-Amiriya, YPM HERR 004988, collector Maser, C., 10 November 1963. *Matruh Governorate*, Bahig, YPM HERR 005721–005728, collector Lovejoy, T. E., 7 October 1962. *Unknown Governorate*, northern Egypt (either Giza Governorate: Imbada, Abu Rawash, or Matruh Governorate: Bahig), YPM HERR 005472, 005473, 005475–005477, 005535–005579, collector Maser, C., November 1963.

Mesalina rubropunctata
(Lichtenstein, 1823)
Red-spotted Lizard

Governorate records. *Aswan Governorate*, Derr Temple, between Korosha and Inieba, YPM HERR 003909, collector Reed, C. A., 16 January 1963. Kom Ombo, Kom Ombo Temple, YPM HERR 003980, 003981, collector Lovejoy, T. E., 27 November 1962. Red Sea, Red Sea coast, YPM HERR 003982, collector Reed, C. A., 22 April 1963. *Beheira Governorate*, Khataba YPM HERR 004874, 004876, collector Maser, C., 18 October 1963.

SQUAMATA: LEPTOTYPHLOPIDAE
Leptotyphlops cairi
(Duméril and Bibron, 1844)
Cairo Worm Snake

Governorate records. *Cairo Governorate*, Imbaba el-Bukkari, Minshat, YPM HERR 005654–006855, 006858–006861, 006863, collector Maser, C., 3 December 1963.

Leptotyphlops macrorhynchus (Jan, 1861)
Beaked Worm Snake

Governorate records. *Cairo Governorate* Imbaba el-Bukkari, Minshat, YPM HERR 006850, 006853, 006857, collector Maser, C., 3 December 1963.

SQUAMATA: SCINCIDAE
Chalcides cf. humilis (Boulenger, 1896)
Saharan Ocellated Skink

Governorate records. *Aswan Governorate*, Kom Ombo, el Biyara, YPM HERR 003951–003953, collector Lovejoy, T. E., November 1962. Kom Ombo, YPM HERR 003972, 003973, collector Helmy, I., 22 April 1963. Seiyala, W bank, YPM HERR 006824, collector Maser, C., 17 January 1964. Gebel Adda, YPM HERR 006825, collector Maser, C., 23 January 1964.

Chalcides ocellatus (Forskål, 1775)
Ocellated Skink

Governorate records. *Alexandria Governorate*, El-Amiriya, YPM HERR 004972–004985, collector Maser, C., 10 November 1963. *Cairo Governorate*, Imbaba, Abu Rawash, Inieba, YPM HERR 004102–004169, collector Maser, C., 17 December 1963. Also collected by C. Maser in Inieba: YPM HERR 004201–004348, 004409–004588, 004679–004792, 1 December 1963; YPM HERR 004870–004873, 8 November 1963; YPM HERR 004993–005041, 10 November 1963. *Giza Governorate*, Imbaba, Abu Rawash, YPM HERR 005603–005618. *Matruh Governorate*, Bahig, YPM HERR 005061–005177, collector Maser, C., 13 November 1963. *Unknown Governorate*, northern Egypt (either Giza Governorate: Imbada, Abu Rawash, or Matruh Governorate: Bahig), YPM HERR 002163–002687, collector Maser, C., November 1963.

Eumeces schneiderii (Daudin, 1802)
Golden Skink

Governorate records. *Aswan Governorate*, Kom Ombo, YPM HERR 003977, 003978, collector Helmy, I., 22 April 1963. *Matruh Governorate*, Bahig, YPM HERR 003917–003920, 003954, collector Lovejoy, T. E., 10 October 1962. Also collected by T. E. Lovejoy in Bahig: YPM HERR 003936, 003937, 8 October 1962. *Unknown Governorate*, northern Egypt (either Giza Governorate: Imbada, Abu Rawash, or Matruh Governorate: Bahig), YPM HERR 005495, collector Maser, C., November 1963.

Scincus scincus (Linnaeus, 1758)
Sandfish

Governorate records. *Cairo Governorate*, Imbaba, Abu Rawash, Inieba, YPM HERR 004877, collector Maser, C., 8 November 1963. Also collected by C. Maser from Inieba: YPM HERR 004867–004869, collector Maser, C., 18 October 1963. *Unknown Governorate*, northern Egypt (either Giza Governorate: Imbada, Abu Rawash, or Matruh Governorate:

Bahig), YPM HERR 005353, 005354, collector Maser, C., November 1963.

Sphenops sepsoides (Audouin, 1829)
Audouin's Sand Skink

Governorate records. *Alexandria Governorate*, El-Amiriya, YPM HERR 004989, collector Maser, C., 10 November 1963. *Cairo Governorate*, Imbaba, Abu Rawash, Inieba, YPM HERR 004845–004866, collectors Maser, C. and Seymour, C., 1 December 1963. Also collected by C. Maser and C. Seymour from Inieba: YPM HERR 005058, 10 November 1963. *Giza Governorate*, Imbaba, Abu Rawash, YPM HERR 005619, 005620, collector Maser, C., 25 November 1963. *Matruh Governorate*, Bahig, YPM HERR 005208, collector Maser, C., 13 November 1963. *Unknown Governorate*, YPM HERR 005330–005352, collector, Maser, C., November 1963.

Trachylepis quinquetaeniata
(Lichtenstein, 1823)
Bean Skink

Governorate records. *Alexandria Governorate*, El-Amiriya, YPM HERR 004965–0014971, collector Maser, C., 10 November 1963. *Aswan Governorate*, Abu Simbil, YPM HERR 006828, collector Maser, C., 19 January 1964. Armin, Armin East Pumping Station, YPM HERR 005684–005690, collector Maser, C., 5 March 1964. Gebel Adda, YPM HERR 006811, 006812, collector Maser, C., 23 January 1964. Also collected by C. Maser in Gebel Adda: YPM HERR 006830, 21 January 1964; YPM HERR 006829, 20 January 1964. Gebel Adda, across river from Ballana, YPM HERR 003967, 003968, collector Reed, C. A., 20 January 1963. Kom Ombo, El-Biyara, YPM HERR 003921–003935, collector Lovejoy, T. E., 9 December 1962. Also collected by T. E. Lovejoy from El-Biyara: YPM HERR 003932, 003933, 24 November 1962; YPM HERR 003934, 003935, 23 November 1962; YPM HERR 003942, 20 November 1962; YPM HERR 003943, 30 November 1962; YPM HERR 003946–003948, 28 November 1962; YPM HERR 003949–003950, December 1962. Kom Ombo, El-Muneiha, YPM HERR 003938–003940, collector Lovejoy, T. E., 4 December 1962. Kom Ombo, water pumping station, YPM HERR 003944, 003945, collector Lovejoy, T. E., 20 November 1962. Kom Ombo, YPM HERR 003969, collector Reed, C. A., 22 November 1963. Derr Temple, between Korosha and Inieba, YPM HERR 003964–003966, collector Reed, C. A., 16 January 1963. El-Marrale, W of temple Qurta, YPM HERR 003963, 003964, collector Reed, C. A., 14 January 1963. Qustal W, S end of district YPM HERR 003955–003962, collector Lovejoy, T. E., 22 January 1963. *Cairo Governorate*, Imbaba, Abu Rawash, Inieba YPM HERR 004170–004181, collectors Maser, C. and Seymour, C., 17 December 1963. Imbaba, Abu Rawash, Inieba, YPM HERR 004350–004408, 004589–004678, 004793–004817, collectors Maser, C. and Seymour, C., 1 December 1963. Also from Inieba: YPM HERR 005042–005049, collector Maser, C., 10 November 1963. *Giza Governorate*, Imbaba, Abu Rawash, YPM HERR 005683, collector Maser, C., 8 November 1963. Also from Abu Rawash: YPM

HERR 005632–005669, collector Maser, C., 25 November 1963. *Matruh Governorate*, Bahig, YPM HERR 005178–005199, collector Maser, C., 13 November 1963. *Unknown Governorate*, northern Egypt (either Giza Governorate: Imbaba, Abu Rawash, or Matruh Governorate: Bahig), YPM HERR 005273–005322, 002688–002700, collector Maser, C., November 1963. No locality data: YPM HERR 006813–006815, 006817–6819, 006832.

Trachylepis vittata (Olivier, 1804)
Bridled Skink

Governorate records. *Unknown governorate*, no locality data, YPM HERR 006816.

SQUAMATA: TYPHLOPIDAE
Typhlops vermicularis (Merrem, 1820)
Greek Blind Snake

Governorate records. *Cairo Governorate*, Imbaba el-Bukkari, Minshat, YPM HERR 006862, collector Maser, C., 3 December 1963.

SQUAMATA: VARANIDAE
Varanus griseus (Daudin, 1803)
Desert Monitor

Governorate records. *Aswan Governorate*, Kom Ombo water pumping station, YPM HERR 003865, 003867, collector Lovejoy, T. E., November 1962.

Varanus niloticus (Linnaeus, 1766)
Nile Monitor

Governorate records. *Aswan Governorate*, Arminna East Pumping Station: Area 3, YPM HERR 005267, collector Seymour, C., 10 March 1964. Gebel Adda Ballana, YPM HERR 003864.

SQUAMATA: VIPERIDAE
Cerastes cerastes (Linnaeus, 1758)
Horned Viper

Governorate records. *Aswan Governorate*, Kom Ombo, 1 mile N by NW of Kom Ombo pumping station, YPM HERR 003915, collector Lovejoy, T. E., 20 November 1962. Gebel Adda, YPM HERR 005257, collector Millet, N. B., 6 February 1964.

Echis pyramidum (Geoffroy, 1827)
Carpet Viper

Governorate records. *Beni Suef Governorate*, El-Wasta Abu Sir el-Malagiel, YPM HERR 004349, collector Maser, C., 13 December 1963. *Faiyum Governorate*, El-Faiyum Tamiya, YPM HERR 005234, collector Maser, C., 1 December 1963.

TESTUDINATA: TRIONCHYIDAE
Trionyx triunguis (Forskål, 1775)
 Nile Soft-shelled Turtle

Governorate records. Aswan Governorate, Gebel Adda, YPM HERR 017771, collector unknown, 10 February 1964.

Discussion

Our re-survey of the herpetological specimens collected by Yale's three expeditions to Aswan found a total of 2486 specimens, mostly collected during the 1963 expeditions (see Table 1). These specimens represent 51 species and 13 families, and include what is likely, at 1232 individual specimens, among the largest holdings of Egyptian *Chalcides ocellatus* in any collection. Although this material provided the description of a new species of cobra, *Naja nubiae* (Wüster and Broadley 2003), 732 specimens (29.5%) were either originally identified incorrectly or, in some instances, have been taxonomically revised (see Baha El Din 2006). Most incorrect identifications were at the genus level globally, though at the species level most incorrect identifications were within Lacertidae and Gekkonidae (36% and 19% of taxonomic changes, respectively), with almost every *Tarentola* specimen assigned to the wrong species of that genus.

Several taxa collected during the expeditions have since received international protection status. For example, *Varanus griseus* is now considered an endangered species and is protected under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES Secretariat 2001) and other regulations (IUCN 2010). It is likely that some decline in the populations had already begun when YPM HERR 003865, 003867 and 005267 were collected. Although habitat loss is probably a critical cause for the decline of this species, local beliefs may also be a factor. This lizard is considered venomous by the Bedouins in the region (Goodman and Hobbs 1994) and as such is killed with some frequency. Additionally, the species is believed by the Bedouins to have medicinal value against snake bites and may be killed for this purpose (Hawlena, pers. obs.).

A single *Trionyx triunguis* skull was collected from Gebel Adda. In Egypt this once common species is now considered endangered and is

found almost exclusively in the Lake Nasser area (Baha El Din 2006). Part of this decline could be a consequence of the harvesting of this species as a food item and the sale of *T. triunguis* shells as tourist souvenirs. Ironically, the single skull from the Yale expeditions may well be from a specimen that had been eaten.

The Aswan Dam was certainly beneficial for the Egyptian population, providing water in times of drought and twice preventing environmentally catastrophic floods in the 1970s (Abu-Zeid and El-Shibini 1997). However, the dam also permanently altered both the anthropology and ecology of the Nile River region. For example, all the collection sites have seen major habitat changes since the time of the Yale expeditions. The sites south of the Aswan Dam are now under water (Figure 3), while the sites north of the dam have been transformed from desert into agricultural fields and narrow wetlands (Figure 4). Kom Ombo, the primary location of the first expedition that included the collection sites for *Varanus griseus*, was surrounded by desert in the 1960s. However, contemporary Kom Ombo is nearly all sugar cane fields irrigated with water from the Nile. The contrast is stunning when comparing a photograph of one of the Kom Ombo sites in Reed (1966:20, fig. 5; Figure 5) with satellite imagery of the same region today (see Figure 4). These changes in hydrology also spurred massive changes in faunal distributions, including patterns of human settlement.

During the construction of the Aswan High Dam, more than 100,000 Nubians were forced to vacate their homes and resettle. Of these, approximately 50,000 Egyptian Nubians were sent to Kom Ombo, while 53,000 Sudanese Nubians were resettled more than 1000 km south of Wadi Halfa (see Fernea and Kennedy 1966). The scale of this migration parallels other faunal responses after completion of the high dam. For example, floral and faunal elements more common to the Nile Delta began to establish themselves along the banks of the Nile River north of the dam (Baha El Din 2006). This changing vegetation facilitated the northern spread of the parasite that causes schistosomiasis (*Schistosoma mansoni*) and its snail vector into Upper Egypt (Talaat et al. 1999; Botros et al. 2005). South of the dam, the back flooding of Lake Nasser into the existing wadi ecosystem has led to the establishment of ground-

TABLE 2. Taxonomic breakdown by year, with the number of individuals collected for each year (except for *Bufo* larvae, which are treated as specimen lots). See text for lot counts. Specimens without collection data are excluded (1 *Trachylepus vittata* specimen and 25 other records for which there are no data); including these gives a total of 2485 individuals collected.

Family	Taxon	1962	1963	1964	Total all years	Percentage of total specimens
<i>Order Anura</i>						
Bufo	<i>Bufo (Duttaphrynus) dodsoni</i>	10	5	15	30	1
Bufo	<i>Bufo (Amietophrynus) kassasii</i>	7	—	—	7	<1
Bufo	<i>Bufo (Amietophrynus) regularis</i>	8	23	25	46	2
Bufo	<i>Bufo (Pseudepidalea) viridis</i>	23	20	—	32	1
Bufo	Unknown Bufo	15 lots	1 lot	—	7 lots	<1
Rana	<i>Ptychadena mascareniensis</i>	—	3	—	3	<1
Rana	<i>Rana (Pelophylax) bedriagae</i>	—	29	—	29	1
<i>Order Squamata</i>						
Agamidae	<i>Laudakia stello</i>	5	47	—	52	2
Agamidae	<i>Pseudotrapelus sinaita</i>	—	1	3	4	<1
Agamidae	<i>Trapelus mutabalis</i>	8	13	—	21	<1
Agamidae	<i>Uromastix ocellata</i>	—	—	1	1	<1
Chamaeleonidae	<i>Chamaeleo chamaeleon</i>	3	—	—	3	<1
Colubridae	<i>Macroprotodon cucullatus</i>	2	—	—	2	<1
Colubridae	<i>Malpolon monspessulanus</i>	—	15	—	15	<1
Colubridae	<i>Platyceps florulentus</i>	—	5	2	7	<1
Colubridae	<i>Platyceps saharicus</i>	—	—	1	1	<1
Colubridae	<i>Psammophis aegypticus</i>	—	4	1	5	<1
Colubridae	<i>Psammophis sibilans</i>	—	54	—	54	2
Elapidae	<i>Naja haje</i>	—	1	—	1	<1
Elapidae	<i>Naja nubiae</i>	1	1	—	2	<1
Gekkonidae	<i>Hemidactylus turcicus</i>	—	3	6	9	<1
Gekkonidae	<i>Ptyodactylus guttatus</i>	—	1	—	1	<1
Gekkonidae	<i>Ptyodactylus hasselquistii</i>	1	3	10	14	<1
Gekkonidae	<i>Stenodactylus mauritanicus</i>	—	3	—	3	<1
Gekkonidae	<i>Stenodactylus petrii</i>	1	1	—	2	<1
Gekkonidae	<i>Stenodactylus sthenodactylus</i>	1	4	—	5	<1
Gekkonidae	<i>Tarentola annularis</i>	2	6	3	11	<1
Gekkonidae	<i>Tarentola mauritanica</i>	3	113	—	116	5
Gekkonidae	<i>Tropicolotes nattereri</i>	—	1	—	1	<1
Gekkonidae	<i>Tropicolotes steudneri</i>	—	1	2	3	<1
Lacertidae	<i>Acanthodactylus boskianus</i>	—	93	—	94	4
Lacertidae	<i>Acanthodactylus longipes</i>	—	1	1	2	<1
Lacertidae	<i>Acanthodactylus pardalis</i>	33	46	—	79	3
Lacertidae	<i>Acanthodactylus scutellatus</i>	1	19	3	23	1
Lacertidae	<i>Mesalina guttulata</i>	—	1	3	4	<1
Lacertidae	<i>Mesalina olivieri</i>	8	51	—	59	2
Lacertidae	<i>Mesalina rubropunctata</i>	2	4	—	6	<1
Leptotyphlopidae	<i>Leptotyphlops cairi</i>	—	10	—	10	<1
Leptotyphlopidae	<i>Leptotyphlops macrorhynchus</i>	—	3	—	3	<1
Scincidae	<i>Chalcides cf. humilis</i>	3	2	2	7	<1
Scincidae	<i>Chalcides ocellatus</i>	—	1232	—	1232	50
Scincidae	<i>Eumeces schneiderii</i>	7	3	—	10	<1
Scincidae	<i>Scincus scincus</i>	—	6	—	6	<1
Scincidae	<i>Sphenops sepsoides</i>	—	50	—	50	2
Scincidae	<i>Trachylepis quinquetaeniata</i>	28	339	12	379	15
Typhlopidae	<i>Typhlops vermicularis</i>	—	1	—	1	<1
Varanidae	<i>Varanus griseus</i>	2	—	—	2	<1
Varanidae	<i>Varanus niloticus</i>	—	—	1	1	<1
Viperidae	<i>Cerastes cerastes</i>	1	—	1	2	<1
Viperidae	<i>Echis pyramidum</i>	—	2	—	2	<1
<i>Order Testudinata</i>						
Trionychidae	<i>Trionyx triunguis</i>	—	—	1	1	<1
Total specimens collected each year		164	2212	82	245	

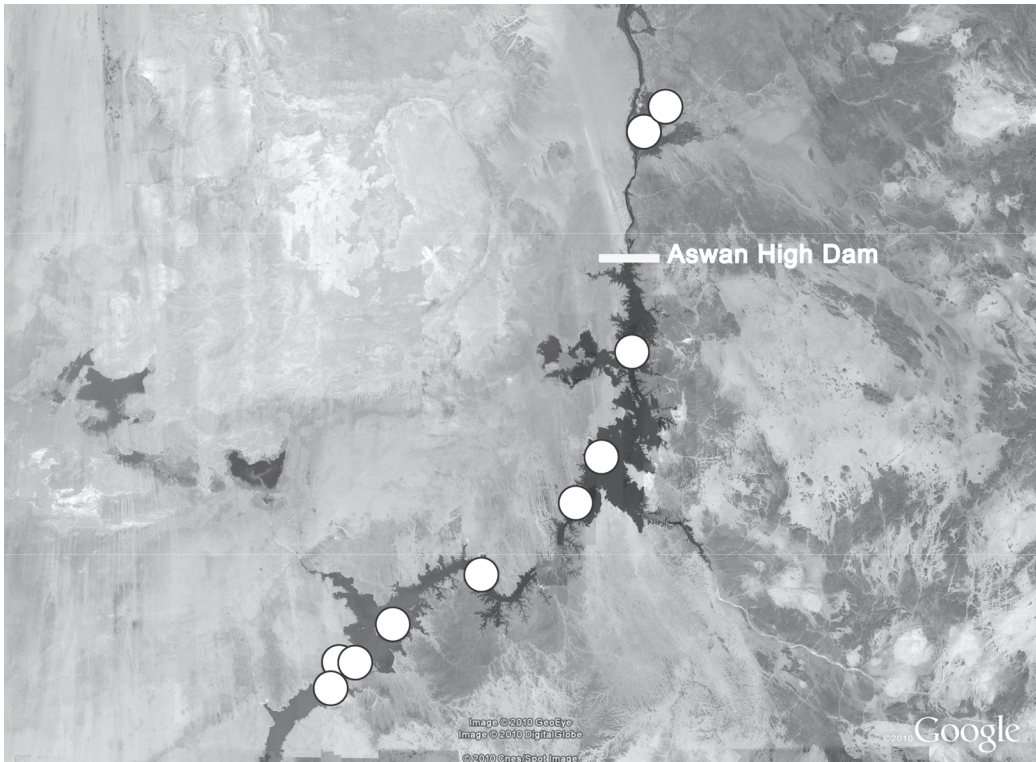


FIGURE 3. Satellite image of the Nile River region today, with collection sites indicated. Relevant sites lacking reliable latitude and longitude coordinates are excluded. All collection sites south of the Aswan High Dam are now under Lake Nasser. Source: Google Earth™; image © 2010 GeoEye; image © 2010 DigitalGlobe; © 2010 Ones/Spot Image; © 2010 Google.

water-dependent shrub community dominated by *Tamarix nilotica* (Springuel et al. 1997). While this community is generally restricted to a few meter-wide strips in Upper Egypt, the recently established communities south of Aswan are in some instances up to 30 km long and 2 km wide (Springuel et al. 1997).

The ecological changes that occurred after the Aswan High Dam's construction could also explain the sudden appearance of the Levant green frog (*Rana bedriagae*) throughout the Nile River system. It is unclear whether or not *R. bedriagae* was first introduced to Egypt sometime in the early to mid 1900s. Both Anderson (1898) and Flower (1933) found no evidence of *R. bedriagae* in the country and Marx (1968) documented the first occurrence of this now widespread frog near Cairo (Baha El Din 2006). The Yale Peabody Museum specimens were collected in the Giza Governorate in 1963 and represent the

earliest documented occurrence of *R. bedriagae* in Egypt, pre-dating the construction of the Aswan High Dam. This suggests already existing small populations of this frog and supports Baha El Din's (2006) hypothesis that the spread of narrow wetlands after the dam's construction could have facilitated this frog's subsequent colonization of nearly two-thirds of the Egyptian Nile.

Baha El Din (2006) states that *Acanthodactylus pardalis* is restricted to northern Egypt, with only a single specimen ever found east of the Nile. Two specimens (YPM HERR 003975 and 003976) reported here are from Kom Ombo east of the Nile and significantly south of any specimens reported by Baha El Din. Possibly the species had a larger distribution historically or the species group in general is very confusing. Baha El Din (2006) discusses in some detail the difficulties in identifying members of this species group. The situation may require further study to fully

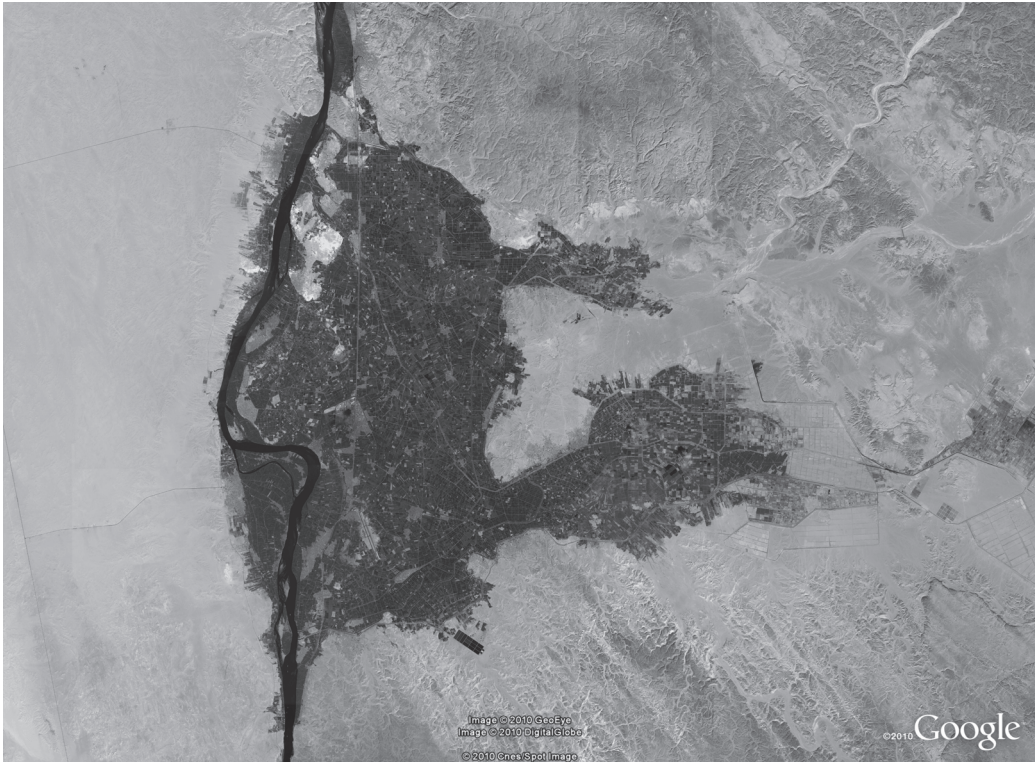


FIGURE 4. Satellite image of Kom Ombo, Egypt, today. Much of the region is irrigated agricultural land and no longer desert habitat. Source: Google Earth™; image © 2010 GeoEye; image © 2010 DigitalGlobe; © 2010 Ones/Spot Image; © 2010 Google.

understand the biogeography of *Acanthodactylus* species in the region. Another interesting note on *A. pardalis* reported here is that most specimens ($n = 79$) were adults of nearly the same body size that were collected in October or November. A closely related species, *A. beershebensis*, has been reported to be an annual species, with synchronous hatching of eggs at the end of May and a lifespan of less than one year (Hawlena et al. 2006). Other *Acanthodactylus* series in our collection from that same period include multiple size classes. Our collection of *A. pardalis* seems to support the idea that this species also has an annual life cycle.

Although the primary purpose of the YUPEN expeditions was to salvage the rich anthropological history south of Aswan, the herpetological specimens that were preserved provide a valuable temporal snapshot into the historical ecosystems that were then present in Lower Egypt. For example, using zoological collections from the time

before the dam construction to track the changing community structure of the Nile River ecosystem may provide insights into larger patterns of the macroecology of the Egyptian Nile area. Furthermore, Egypt has been proposed as a major dispersal corridor that facilitated the historical interchange of African and Eurasian species (Bowen and Jux 1987; Delaney 1989; Baha El Din 2006; see also Fernandes 2008). This country contains few endemic species; almost 70% of the region's reptilian faunal elements are shared with southwest Asia, while only 40% are shared with the rest of North Africa (Marx 1968; Baha El Din 2006). Much of this species richness is distributed along the Nile River (Baha El Din 2006), suggesting either more geologically recent invasion or local extirpation; evidence indicates that the present form of this river system originated only 800,000 years ago (Said 1993). As anthropogenic factors will undoubtedly continue to reshape the Nile River system, historical collections such



FIGURE 5. An excavation site at Kom Ombo, Egypt, in the 1960s. The desert habitat is clearly visible around the site (Reed 1966:20, fig. 5; © 1966 Peabody Museum of Natural History, Yale University).

as this could be invaluable for future studies attempting to reconstruct the macroevolutionary history of northwestern Africa.

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