

The Reptiles of Pohnpei, Federated States of Micronesia

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Abstract—Eighteen species of terrestrial reptiles are indigenous to or well-established introductions on Pohnpei and its lagoon islands—17 lizards (7 geckos, 9 skinks, 1 monitor lizard) and one snake (*Ramphotyphlops braminus*). Two species of sea turtles (*Chelonia mydas* and *Eretmochelys imbricata*) occur regularly in surrounding waters and seven additional reptile species are accidentals or vagrants in marine and terrestrial habitats. Old records of *Gekko gecko* and *Python reticularis* are considered doubtful. The Pohnpei Island skink (*Emoia ponapea*) is the only reptile endemic to Pohnpei, and it is widely distributed in lowland and upland forest, being most numerous in the higher elevations. It is the only reptile regularly encountered in cloud forest, above about 600 m. The other species occur widely in Micronesia, and most are widely distributed throughout Oceania. The house gecko (*Hemidactylus frenatus*) is a recent invader that has rapidly colonized urban and suburban areas, apparently displacing previously established species. None of the present reptile species appears endangered or threatened by current levels of human activity, although the progressive encroachment of agriculture into the more remote forest areas has resulted in marked loss of intact native forest, the principle habitat on Pohnpei.

Introduction

The reptile fauna of Pohnpei has never been previously reviewed systematically. Comprehensive, annotated species lists are lacking, and the scanty locality records and ecological notes are widely scattered throughout the periodical literature. The present study reviews the distribution and relative abundance of all the reptiles recorded on Pohnpei and its lagoon islands. This study is based largely on field surveys I conducted during May–August 1995, together with records extracted from the literature and information provided by correspondents and local residents. The main objectives are to consolidate information on the distribution of Pohnpei reptiles and to furnish a baseline against which any future population changes can be measured.

Study Area

Pohnpei is a roughly circular, five-million-year-old volcanic dome about 23 km in diameter in the west-central Pacific (Fig. 1). It has an area of approximately 355 km² and is located 766 km north of the equator in the eastern Caroline Islands, Federated States of Micronesia (MacLean et al. 1986, Merlin et al. 1992, Pohnpei State Office of Budget, Planning and Statistics 1992). It is divided into five political municipalities, each with its own traditional ruling leadership. The maximum elevation is just under 800 m (U.S. Army Corps of Engineers 1986). Densely forested, steep ridges and deep valleys radiate outward and downward to foothills and coastal lowlands, including a mangrove zone up to 2 km wide. Laird (1982) reported that 61% of the island is steep mountains, 20% rolling hills and plateaus, 5% bottomlands ("valley flood plains and coastal plains"), and 14% mangrove swamps. A discontinuous barrier reef encloses a lagoon up to 6 km wide along with numerous volcanic and coral reef islets. Warm humid conditions prevail throughout the year. The average annual temperature is 27° C and the average monthly temperature does not vary from the annual average by more than one degree (Laird 1982). Relative humidity averages 80–90%. Mean annual rainfall in Kolonia is approximately 485 cm, with estimates for the central highlands ranging to 1,015 cm (Merlin et al. 1992).

The 1994 FSM national census recorded 31,540 people living on Pohnpei, with 6,660 of them residing in Kolonia (the main settlement), the others being distributed among smaller villages and settlements throughout the municipalities, mainly in the coastal lowlands (Office of Planning and Statistics 1996). An approximately 87 km long circumferential road links all of the major settlements, but no roads traverse the island. Subsistence farming is widespread in the vicinity of the settlements, and fishing, tourism, and government work contribute to the local economy. As the human population on Pohnpei increases, land use for commercial development and subsistence crops also increases. Current agricultural practices, especially clear-cutting patches of forest, appear to be the main cause of a recent and marked decline in native upland forest, from about 42% of the vegetation cover in 1975 to 15% in 1995 (Trustrum 1996).

Habitats

Mangroves.—Mangrove forest, dissected by numerous streams and man-made channels, forms a nearly continuous belt around the island, covering about 55 km² (Petteys 1986) and reaching its greatest development (up to 2 km wide) along the southern and western shores. Significant alterations to this habitat include clear cutting, landfills, dredging, and other commercial and private developments. Mature forest is dominated by *Bruguiera*, *Lumnitzera*, *Rhizophora*, *Sonneratia*, and *Xylocarpus*. The understory is open and the canopy is about 20–30 m high. In some areas, especially along the seaward edges, *Rhizophora* spp. form dense growths with a nearly impenetrable tangle of prop roots, and in

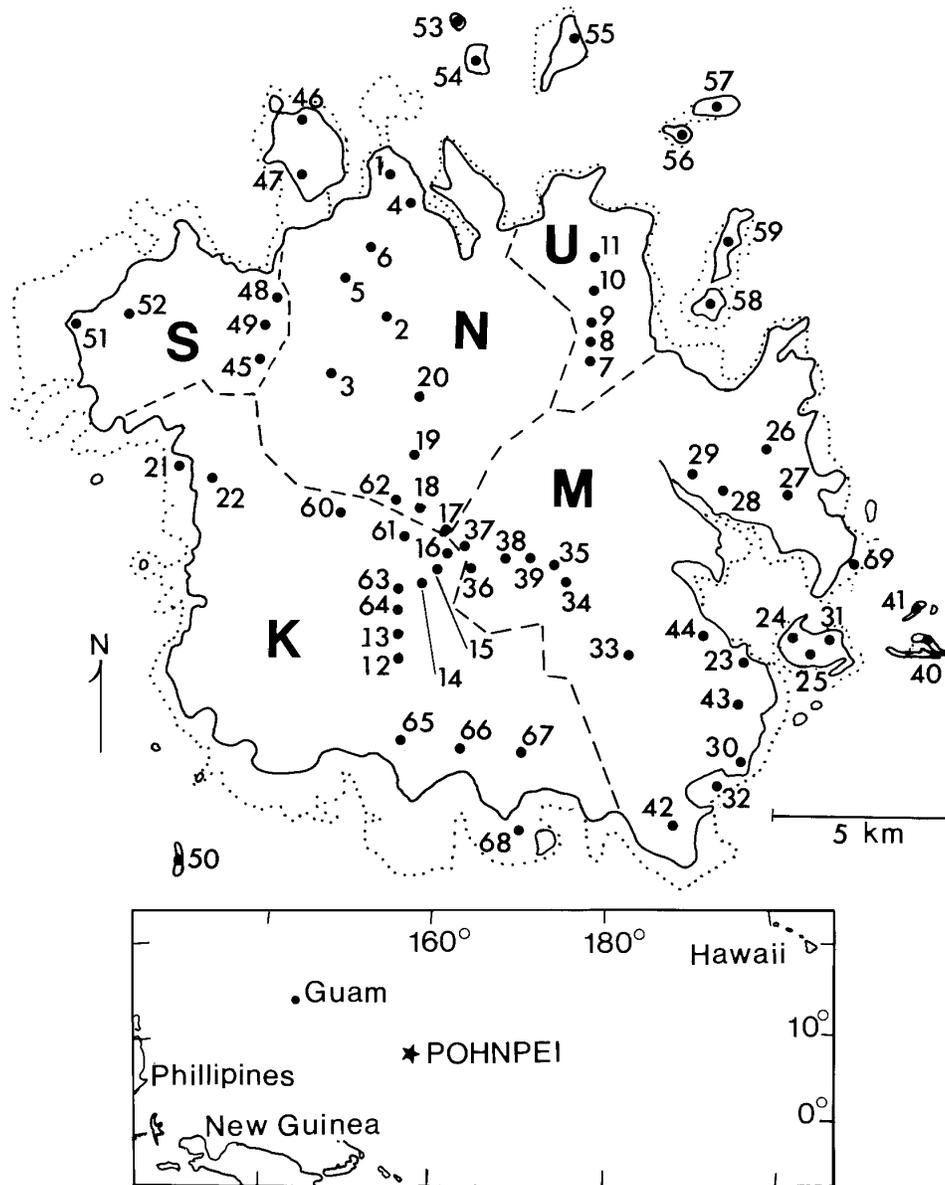


Figure 1. Location of Pohnpei and 69 census sites surveyed during summer 1995; municipality abbreviations are K = Kitti, M = Madolenihmw, N = Nett, S = Sokehs, U = U.

other areas are dwarfed and scrub-like. Different mangrove subhabitats were not distinguished during this survey.

Freshwater marsh.—Marshes are spottily distributed throughout the island. The vegetation consists largely of sedges and herbs with scattered trees and shrubs. Reeds (*Phragmites karkar*) are dominant in some areas. *Pandanus* sp. was common and dominant at the two sites I sampled which are among the largest marsh areas on the island. One covered about 11 hectares near Palikir (site 51 in this study, and site 37 in Stemmermann & Proby 1978: 61), and the other covered about 20 hectares (Stemmermann & Proby 1978: 61) near Wone (site 68 in this study).

Grasslands.—This habitat is defined broadly to include open areas with a single layer of vegetation consisting largely of grasses (e.g. *Ischaemum*, *Pennisetum*) and other herbaceous cover, along with scattered shrubs and small trees. I follow MacLean et al. (1986) in including areas dominated by the ground-covering fern *Dicranopteris*. The xerophytic club moss (*Lycopodium cernuum*) also is common. These areas are usually maintained artificially by periodic cutting and burning and are considered to be the result of destruction to forest vegetation (MacLean et al 1986). They are the least productive habitat for reptiles.

Edificarian.—Buildings and other manmade structures of wood, stone, concrete, and other materials provide an important habitat especially for many gecko species that are commensal with humans in both urban and rural settings.

Ruderal.—This habitat consists of grassy, weedy areas usually near settlements and adjacent to buildings. It includes roadsides, vacant lots, and lawns, especially those in need of grooming.

Disturbed forest and secondary vegetation.—These two vegetation types have been merged here to form a single habitat category. Disturbed forest occurs frequently below about 200 m, where many of the native trees have been selectively cut and where the understory has been cleared or modified by human activity directly or by livestock, especially pigs. Secondary vegetation consists mainly of thickets of small trees, shrubs, and vines where the forest has been more severely disturbed, and where most of the mature trees have been removed; *Hibiscus tiliaceus* and the vine *Meremia peltata* are common.

Agroforest.—Native forest and cultivated plants interface in this habitat. The forest is only slightly modified, and most of the mature trees usually are left standing. The chief crops are banana (*Musa*), breadfruit (*Artocarpus*), coconut (*Cocos*), taro (*Colocasia*, *Alocasia* and *Cyrtosperma*), and tapioca (*Manihot*). Sakau (*Piper methysticum*) is consumed for its psychoactive properties. It is an important cash crop widely cultivated both in lower elevations and on steep slopes in the higher elevations where patches grown in secret are less likely to be pilfered, and where it requires less intensive cultivation. Areas prepared for planting sakau are more extensively cleared than those for other crops, but they generally cover a smaller area.

Rainforest.—This is the most widespread and abundant vegetation type on Pohnpei, ranging from the lowlands to about 600 m on the mountain slopes and

ridges. Below about 100 m the forest has been altered by centuries of cultivation and other human activities (Merlin et al. 1992). Native forest remains more or less intact at the higher elevations, but small scale agriculture, especially the planting of sakau is taking place with increasing frequency and extends to near the upper elevational limits of this habitat. I observed areas of about one hectare in area cut for sakau at elevations of about 500–550 m, and saw more cutting in summer 1995 than in 1994. Broadleaf trees about 25–30 m tall predominate to an elevation of about 400 m. Common species are *Barringtonia racemosa*, *Camptosperma brevipetiolata*, *Elaecarpus carolinensis*, *Myristica insularis*, *Parinari laurina*, and the climbing pandanus *Freycinetia ponapensis*. The ivory nut palm (*Metroxylon amicarum*) is common in the wetter areas. Mosses and ferns are common epiphytes, especially at the higher elevations, as are tree ferns (*Cyathea* spp.). Palm forest forms a distinct and widespread subtype between about 450 and 600 m, and is dominated by the endemic kotop palm (*Clinostigma ponapensis*).

Cloud forest.—This vegetation type, also known as moss forest, dwarf forest, and crest vegetation occurs on the highest peaks and ridges, usually above about 600 m; kotop palms and tree ferns are dominant. Rainforest trees also occur here but are much smaller in girth and height than they are at lower elevations, the canopy being about 5–10 m high. Many plants endemic to Pohnpei are found only in this zone, including *Pandanus patina*, which forms nearly pure stands in the wetter areas. Mosses and ferns festoon the trunks, limbs, and branches of trees and shrubs, and they provide much of the ground cover. This habitat is widespread through the central highlands, but the total area is only about 7 km² (Engbring et al. 1990).

Atoll forest.—This forest type occurs mainly on the low, flat lagoon islands. Among the dominant trees are *Barringtonia asiatica*, *Calophyllum inophyllum*, *Cocos nucifera*, *Cordia subcordata*, *Ficus* spp., *Guettarda speciosa*, *Pisonia grandis*, and *Terminalia carolinensis*. The largest trees are about 10–15 m tall and 1–2 m in diameter at breast height. Dense, coastal thicket usually dominated by *Pemphis acidula*, *Scaevola taccada*, and *Tournefortia argentea* often occurs between the forest and the upper beach. The forest understory is open with scattered shrubs and small trees and ferns. Vines (e.g. *Canavalia maritima*, *Vigna marina*) cover much of the ground and low vegetation at the forest edge.

Sample Sites

The 69 sites where census counts were made are described below with respect to location (see also Fig. 1), habitat type, elevation, and search effort (hours) during daytime (D) and nighttime (N) surveys.

1. *Edificarian and ruderal* habitats throughout the Kolonia area; elev. 3–40 m; 6.2 hr D, 4.1 hr N.
2. *Disturbed forest* about 4.5 km south of Kolonia and just south of Dolenkahmar; elev. 122 m; 0.5 hr D.

3. *Rainforest* about 5–6 km south of Kolonia along headwaters of Nanpil River southwest of Liduduhniap Falls; elev. 168–207 m; 1.7 hr D.
4. *Disturbed forest* near southwestern edge of Kolonia; elev. 25 m; 1.4 hr D, 0.8 hr N.
5. *Disturbed forest and secondary vegetation* 2.5 km south of Kolonia; elev. 98 m; 1.1 hr D.
6. *Grasslands* about 2 km SSW of Kolonia (sight records only); elev. 68 m; 1.3 hr. D.
7. *Cloud forest* near summit of Kupwuriso; elev. 622 m; 1.0 D., 0.5 N.
8. *Rainforest* about 0.5 km north of Kupwuriso; elev. 591 m; 0.8 D.
9. *Rainforest* about 1.0 km north of Kupwuriso; elev. 518 m; 0.5 D.
10. *Rainforest* about 2.0 km north of Kupwuriso; elev. 494 m; 1.0 D.
11. *Rainforest* about 3.0 km north of Kupwuriso; elev. 354 m; 0.5 D.
12. *Rainforest* about 3.0 km north of Enipeihn Pah (sight records only); elev. 311 m; 0.5 D.
13. *Rainforest* about 3.5 km north of Enipeihn Pah (sight records only); elev. 518 m; 0.5 D.
14. *Cloud forest* near summit of Dolen Uhd; elev. 616 m; 0.5 D.
15. *Rainforest* about 0.5 km northeast of Dolen Uhd; elev. 555 m; 0.5 D.
16. *Rainforest* at rock shelter base camp near foot of southern slope of Nahnalaud; elev. 512 m; 0.8 D, 1.0 N.
17. *Cloud forest* near summit of Nahnalaud; elev. 762 m; 0.6 D.
18. *Cloud forest* on north slope of Nahnalaud (sight records only); elev. 628 m; 0.5 D.
19. *Rainforest* on ridge leading northward from summit of Nahnalaud (sight records only); elev. 384 m; 0.5 D.
20. *Rainforest* about 2.0 km south of Nanpil hydroelectric plant (sight records only); elev. 171 m; 0.5 D.
21. *Mangroves* at Meilap to about 2.5 km south of Meilap; elev. 0; 2.3 D, 0.9 N.
22. *Secondary vegetation* (0.8 D) and *Edificarian* habitats (0.5 D) at Sakartik, just south of Meilap; elev. 40–50 m.
23. *Edificarian* on walls of buildings (1.4 N), *Ruderal* in weedy areas adjacent to buildings (1.2 D), *Grassland* just south of animal farm complex (0.5 D—no records), and *Disturbed forest* on hillside at southeastern edge of school grounds (0.5 D)—all at Pohnpei Agriculture and Trade School (PATS); elev 6–30 m.
24. *Agroforest* at Temwen [Island]; elev. 30 m; 0.5 D.
25. *Disturbed forest* at Temwen; elev. 30 m; 0.5 D.
26. *Secondary vegetation* (0.5 D) and *Grassland* (0.5 D—sight records only) 1–2 km NNW Lukop Elementary School; elev. 18 m.
27. *Ruderal* in weedy vegetation at Lukop Elementary School grounds; elev. 12 m; 0.5 D.
28. *Secondary vegetation* about 1.5 km west of Lukop Elementary School; elev. 12 m; 0.5 D.

29. *Grassland* about 0.5 m east of Sapwalap; elev. 12 m; 0.5 D.
30. *Disturbed forest* along disused road to mangroves and site of former dispensary at Wapar; elev. 3–12 m; 1.0 D.
31. *Edificarian* on walls of Temwen Elementary School buildings; elev. 30 m; 2.1 N.
32. *Mangroves* just south of Ipwal; elev. 0; 1.7 D.
33. *Grassland* just upstream from Mahnd settlement (0.8 D) and *Disturbed forest* (1.8 D) from Mahnd to about 1.0 km upstream; elev. 90–120 m; 1.8 D.
34. *Rainforest* near Pahn Sile; elev. 98–122 m; 0.5 D.
35. *Rainforest* on southern slope of Dolen Lepen; elev. 220 m; 0.5 D.
36. *Cloud forest* at summit of Ngihneni (sight records only); elev. 768 m; 0.5 D.
37. *Cloud forest* along 1.5 km of ridge trail between Nahnalaud and Ngihneni (sight records only); elev. 700–762 m; 0.5 D.
38. *Rainforest* between Ngihneni and Dolen Lepen; elev. 537 m; 0.5 D.
39. *Rainforest* between Ngihneni and Dolen Lepen; elev. 445 m; 0.5 D.
40. *Atoll forest* on Na [Island]; elev. < 3 m; 2.6 D, 3.1 N.
41. *Atoll forest* on Nahpali [Island]; elev. < 3 m; 1.0 D.
42. *Disturbed forest* at Lohd Pah; elev. 30–37 m; 1.6 D.
43. *Secondary vegetation* at Enipoas; elev. 37 m; 0.6 D.
44. *Disturbed forest* alongside stream below waterfall at Pahlap; elev. 24–37 m; 0.5 D.
45. *Rainforest* near summit of Temwetemwensekir; elev. 579 m; 0.5 D.
46. *Agroforest* at northern end of Sokehs Powe; elev. 3 m; 1.0 D.
47. *Agroforest* at southern end of Sokehs Pah; elev. 30 m; 1.0 D.
48. *Secondary vegetation* about 0.5 km southwest of power station at Nipaip; elev. 122 m; 0.5 D.
49. *Rainforest* at the foot of the northern slope of Temwetemwensekir; elev. 146–165 m; 0.8 D.
50. *Atoll forest* on Nahlap [Island]; elev. < 3 m; 2.3 D.
51. *Freshwater marsh* at Palikir; elev. < 3 m; 2.1 D.
52. *Disturbed forest* at Lewetik; elev. 46 m; 0.8 D.
53. *Disturbed forest* on Sapwtik [Island]; elev. 3–6 m; 1.0 D.
54. *Agroforest* (2.4 D, 0.5 N), *Secondary vegetation* (1.0 N), and *Edificarian* habitats (1.5 D), all on Lenger [Island]; elev. 3–60 m.
55. *Agroforest* on Parempei [Island]; elev. 3–6 m; 1.8 D.
56. *Agroforest* on Mwahnd Peidi [Island]; elev. 3–30 m; 0.8 D.
57. *Agroforest* on Mwahnd Peidak [Island]; elev. 3–12 m; 1.7 D.
58. *Agroforest* on Takaieu [Island]; elev. 3–18 m; 2.6 D.
59. *Agroforest* on Dehpehk [Island]; elev. 3–12 m; 2.2 D.
60. *Rainforest* near headwaters of the Lehn Mesi, just above Lipwentiac Falls; elev. 366 m; 0.5 D.
61. *Rainforest* near headwaters of the Lehn Mesi, at Nanmeir; elev. 366 m; 0.5 D.

62. *Rainforest* at the lower edge of cloud forest at Dole Mweir; elev. 658 m; 0.8 D, 0.8 N.
63. *Rainforest* (recently cut and burned) just north of Pohn Pehnman; elev. 567 m; 0.5 D.
64. *Grassland* at Pohn Pehnman; elev. 518 m; 0.5 D—no records.
65. *Agroforest* at Enipeihn Pah; elev. 146 m; 0.5 D.
66. *Agroforest* at Enipeihn Powe; elev. 61 m; 0.5 D.
67. *Secondary vegetation* alongside a stream (0.5 D) and *Edificarian* on the walls of the Catholic Mission buildings at Wone; elev. 12–30 m.
68. *Freshwater marsh* at Nan Panilap; elev. < 3 m; 0.8 D—no records, 1.3 N—no records.
69. *Mangroves* near Sapwalap and just north of Diadi; elev. 0 m; 4.5 D—search effort confined to *Varanus indicus*.

Methods

Terms of abundance used to appraise overall status are: Common (at least 30 sightings/day in suitable habitat and under optimal weather conditions), Fairly common, (10–30 sightings/day), Uncommon (up to 10 sightings/day on most days), and Scarce (up to 5 sightings/day, but possibly unrecorded on more than half the days); Hyp = hypothetical or doubtful and V = vagrant or accidental, including unestablished introductions. Timed census counts were made in different habitats among 69 sample sites distributed throughout Pohnpei and its lagoon islands during 21 May–4 August 1995. Most of the sites were sampled only once during day or night or both, and the minimum amount of time allocated each session was 30 minutes. Site 54 was censused on two different daytime surveys, site 4 on two different nights, and 23 and 31 both were surveyed on three different nights. Different areas of Kolonia were visited different times throughout the study period, and all of these observations were pooled under site 1 (=Kolonia).

Counts were made by slowly walking through a selected habitat and recording individual encounters for each species. Voucher specimens were collected whenever possible. In the case of the green tree skink, *Lamprolepis smaragdina*, which is easily identified, even at considerable distance, relatively little collecting effort was expended. Additionally, *L. smaragdina* was also censused along measured distances on roadsides and trails. A much greater effort was directed toward collecting examples of the three species of similarly patterned, striped *Emoias*, which are at times difficult to distinguish by sight under field conditions; the status of *E. caeruleocauda*, *E. cyanura*, and *E. impar* was assessed by specimen records only.

Place names are from maps (U.S. Geological Survey 1983), with emendations in some spellings provided by local residents. Elevations were measured using a Barigo altimeter scaled in 20-foot increments, and distances were estimated from topographic maps (U.S. Geological Survey 1983) or measured directly using a Topometric Hip Chain scaled in meters. Specimens were deposited in

the College of Micronesia Reference Collection, Kolonia, Pohnpei; the Museum of Comparative Zoology, Harvard University (MCZ); and the National Museum of Natural History, Smithsonian Institution (USNM), Washington, D.C.

Species Accounts

TURTLES

Dermochelys coriacea.—Pritchard (1977, 1981) alluded to an unidentified newspaper article that described a large leatherback (444 kg, 2.167 m in total length) caught by two fishermen off Parem Reef. There are no other records.

Chelonia mydas.—The green turtle (locally called kalap) occurs regularly in the lagoon surrounding Pohnpei and its offshore islands, but quantitative data on the status of populations are lacking (Pritchard 1981, National Marine Fisheries Services & U.S. Fish and Wildlife Service 1998a). Green turtles are often hunted for food, frequently appearing among ethnic dishes served at festivals, funerals, and other social gatherings. Personal observations and anecdotal information from local residents suggest turtles are more common than the scanty published records indicate, but less numerous now than in the past. Six biologists recorded only one *C. mydas* during a six-week survey of Pohnpei coastal resources in summer 1984, and they listed eight former “sea turtle” breeding sites (some possibly active) among the more southern lagoon islands (U.S. Army Corps of Engineers 1985, 1986). Among Pohnpei, its offshore islets and its eight outlying atolls, only Oroluk Atoll (about 325 km WNW of Pohnpei) is a significant nesting area for *C. mydas* (National Marine Fisheries Service & U.S. Fish and Wildlife Service 1998, Buden 1999).

Eretmochelys imbricata.—Many local residents told me the hawksbill turtle (locally called sapwake) occurs regularly but is much less common than the green turtle; quantitative data are lacking. Only two hawksbills were recorded during a six-week coastal resource survey of Pohnpei by a team of six biologists in summer 1984 (U.S. Army Corps of Engineers 1986). Information on nesting of *E. imbricata* anywhere in the Federated States of Micronesia is scanty, “but all evidence suggests, at best, marginal nesting...[with numbers] being precariously low and very much at risk” (National Marine Fisheries Service & U.S. Fish and Wildlife Service 1998b). The hawksbill is more prized for its shell than for its meat, which is sometimes toxic and was responsible for several recent fatalities on Sapwuahfik Atoll, an outlier of Pohnpei State (Buden, in press).

Trachemys scripta.—A “red-eared” slider with a carapace length of about 20 cm was found alive in the public dump at Tekehtik in January 1997. I observed it briefly before it was adopted as a pet of a government staff worker. A recommendation that it be preserved as a scientific specimen documenting the record and preventing release of a potentially unwanted exotic was submitted to several government offices, but apparently not followed. The natural range of the slider turtle extends roughly from the southeastern quadrant of the United States southward through Mexico and Central America to Venezuela (Ernst 1990). However,

its popularity in the pet trade has resulted in numerous disjunct populations worldwide (Luiselli et al. 1997), including in the Pacific on Hawai'i (McKeon 1978), Guam (McCoid 1992, 1993) and Saipan (breeding status unknown—McCoid 1992). The Pohnpei record is the first for the Federated States of Micronesia.

CROCODILES

Crocodylus porosus.—Allen (1974) reported on a male saltwater crocodile measuring 380 cm in total length that was captured in mangroves in Kitti Municipality (southern Pohnpei) on 28 March 1971. Peterson (1998) provides additional details leading to its capture, beginning with the “mysterious” disappearances of chickens and pigs in the area. The specimen was not saved, but photographs appeared in the 1 May 1971 issue of *Highlights*, a newsletter of the Pacific Islands Trust Territory published in Saipan. This is the only record of a crocodile from Pohnpei. The nearest resident populations of crocodiles occur in the Bismark Archipelago, 1,360 km to the south, and in Palau, nearly 2,400 km to the west. Whether the Pohnpei specimen was deliberately or inadvertently released or arrived under natural circumstances is unknown.

LIZARDS

Geckos

Gehyra mutilata.—The stump-toed gecko is widespread in the Pacific (McCoy 1980, Zug 1991). It is generally uncommon on Pohnpei, occurring mainly in edificarian habitats and less frequently in disturbed or secondary vegetation not far from human habitation. The greatest concentration I encountered was on the buildings of the Temwen Elementary School, where the 22 specimens I collected in three nights represented 56% of all geckos (among five species) collected there, and with a capture rate of 7.3/hour.

Gehyra oceanica.—The oceanic gecko is widespread in the Pacific (Zug 1991) and is one of the most common geckos on Pohnpei. It is usually seen on buildings and on tree trunks (especially *Cocos*) at night, being most numerous in the settlements. It is also widely distributed among both inhabited and uninhabited lagoon islands (Table 2). During the day, I collected several examples and saw many others beneath loose, flaking bark on standing trees in disturbed lowland forest, mangrove swamps, and atoll forest. I observed a maximum of 7 together in the interstices of a large strangler fig (*Ficus prolixa*) at Sokehs Powe, near site 46.

Hemidactylus frenatus.—The house gecko, native to Asia and the Indo-Pacific, has been introduced widely throughout the tropics, colonizing many Pacific islands, especially since World War II (Hunsaker 1966, Case et al. 1994). *H. frenatus* was reported on Pohnpei for the first time by Petren et al. (1993), and the earliest record I found is a specimen in California Academy of Sciences (CAS 160111) collected by J. Vindum and S. Turpie at Nanfolemal Point in the vicinity of the Village Hotel on 17 February 1986. The house gecko is common at PATS in Madolenihmw, at the opposite side of the island from Kolonia, but is scarce on

Table 1.—Capture rate (animals/hour) and percent of total captures (in parentheses) of geckos during nighttime surveys on Pohnpei and lagoon islands.

Species	Habitat										
	Edificarian										
	Mangroves	Marsh	Kolonia	Wone/ PATS ^a	Lagoon islands	Df/Sv ^b	Agroforest	Rain forest	Cloud forest	Atoll forest	
<i>Gehyra mutilata</i>	0	0	0.3 (3)	1.9 (20)	5.7 (74)	0.6 (3)	0	0	0	0	0
<i>G. oceanica</i>	0	0	2.0 (17)	1.9 (17)	3.8 (42)	1.1 (5)	0.8 (2)	0	0	0	1.8 (17)
<i>Hemidactylus frenatus</i>	0	0	14.1 (51)	12.3 (47)	0.2 (1)	0	0.8 (1)	0	0	0	0
<i>Lepidodactylus lugubris</i>	0	0	0.9 (10)	4.4 (52)	1.6 (22)	0	0	0	0	0	1.3 (16)
<i>L. moestus</i>	0	0	0	0	0	0	0	0	0	0	0
<i>Nactus pelagicus</i>	0	0	0.3 (14)	0	0	2.8 (72)	0	0.4 (14)	0	0	0
<i>Perochirus ateles</i>	0	0	0	0.7 (8)	4.2 (76)	1.1 (8)	0	0	0	0	0.5 (8)

^aPonape Agriculture and Trade School.^bDisturbed forest and secondary vegetation.

nearby Temwen Island, which is separated from the mainland only by a short causeway; it is unrecorded on the other lagoon islands. My only record outside of human habitation was one collected on the stalk of a banana plant in agroforest on Temwen. It is common in edificarian habitats in the more densely settled areas of Pohnpei and is by far the most abundant gecko in Kolonia, where the capture rate was about seven times greater than for the secondmost frequently collected species, *Gehyra oceanica* (Table 1). It is most numerous in the vicinity of lights, and I frequently counted 5–8 individuals within a 1 m radius of incandescent lights at night. I averaged 65 sightings per hour during nighttime surveys of the outside walls of buildings in Kolonia over a period of 3.3 hours covered in 30–60 minute blocks.

Lepidodactylus lugubris.—The mourning gecko is widespread in the Pacific (Gibbons 1985). It is common in edificarian and ruderal habitats throughout Pohnpei, though relatively less numerous in Kolonia than in other settlements probably because of competitive exclusion by a burgeoning population of *Hemidactylus frenatus*. Case et al. (1992, 1994) documented numerous examples elsewhere in the Pacific where *H. frenatus* has displaced *L. lugubris*, and Petren et al. (1993) and Petren & Case (1996) experimentally demonstrated the competitive superiority of *H. frenatus* over *L. lugubris* in urban/suburban habitats, where insect prey is abundant and clumped around lights. Radtley et al. (1995) presented biochemical and cytological evidence that *L. lugubris*, which is parthenogenetic, originated from hybridization of two sexual species known to be sympatric only in the Marshall Islands.

Lepidodactylus moestus.—Although first described in 1867, this species has long been merged with *L. lugubris*, which it closely resembles, and has only recently been resurrected by Ota et al. (1995). Compared with *L. lugubris*, *L. moestus* is smaller and usually lacks the two longitudinal, paravertebral rows of dark spots or irregular shaped markings usually found in *L. lugubris*, and it is bisexual, whereas *L. lugubris* is parthenogenetic and males are unknown. *L. moestus* is unknown outside of Micronesia, where it is widespread and “found in primary and secondary vegetation and human inhabitation” (Ota et al. 1995). Few specimens have been collected on Pohnpei and its status there is uncertain. It is considered one of the parental species of *L. lugubris* (Radtkey et al. 1995). R. Crombie (pers. comm.) and G. Pregill collected two juveniles (USNM 199118, 199119) in a patch of agroforest in Kolonia on 3 July 1994, and Ota et al. (1995) reported on one specimen in the California Academy of Sciences (CAS 182384) collected on Pohnpei on a bush at night. During the 1994 summer survey, I collected five on the walls of Temwen Elementary School buildings (site 31) and one on a building at PATS (site 23) (USNM 518911–518916), all at night. I also collected a male (hemipenes everted, SVL 40.0 mm—COM collection, uncataloged) on an inside wall of the College of Micronesia library, Palikir campus, during mid-day on 12 May 1998. Another (USNM 343816) that I collected on Pakin Atoll on 26 June 1994 is the only record among the eight outlying atolls of Pohnpei State (Buden 1996).

Table 2.—Distribution of terrestrial reptiles on Pohnpei lagoon islands. Numbers indicate specimens collected during summer 1995 (sight records in parentheses); a plus sign indicates other sources.

Species	Islands ^a										
	SA	LN	PA	MI	MK	DP	TK	TM	NP	NA	NL
Geckos											
<i>Gehyra mutilata</i>		5						22			
<i>G. oceanica</i>		16	1		2	1		2		8	3
<i>Hemidactylus</i>											
<i>frenatus</i>								2			
<i>Lepidodactylus</i>											
<i>lugubris</i>		2						5		5	
<i>Nactus pelagicus</i>		5									
<i>Perochirus ateles</i>		11			2		1	10		2	2
Skinks											
<i>Emoia boettgeri</i>	1	3		2	3	2	3	(3)	1	5	1
<i>E. caeruleocauda</i>	8	14	6	3	1	14		11			
<i>E. impar</i>	2	4		2	5	3	8	3	20	8	5
<i>E. jakati</i>		1	3	2	1	2	2	1			
<i>Eugongylus</i>											
<i>albofasciolatus</i>		4	1		(2)		1		1		
<i>Lamprolepis</i>											
<i>smaragdina</i>	(2)	1		1	(3)	(2)	2	(2)	(1)	1	1
Monitor lizards											
<i>Varanus indicus</i>											+ ^b
Snakes											
<i>Ramphotyphlops</i>											
<i>braminus</i>											

^aDP = Dehpehk, LN = Lenger, MI = Mwahnd Peidi, MK = Mwahnd Peidak, NA = Na, NL = Nahlap, NP = Nahpali, PA = Parempei, SA = Sapwtik, TK = Takaieu, TM = Temwen.

^bunconfirmed reports by visitors from Pohnpei.

Nactus pelagicus.—The rock gecko, also known as the Pacific slender-toed gecko, is unisexual and widespread in Oceania (Zug & Moon 1995). It was scarce on mainland Pohnpei during the summer 1995 survey, the only encounters being a specimen collected on a building in Kolonia, several individuals observed on buildings in Sakartik (site 22), and one collected on the trunk of a tree fern

Table 3.—Observation rate (animals/hour) and percent of total observations (in parentheses) of skinks during daytime surveys on Pohnpei and lagoon islands.

Species	Habitats										
	Mangroves	Marsh	Grassland	Ruderal	Df/Sv ^a	Agroforest	Rain forest	Cloud forest	Atoll forest		
<i>Emoia boettgeri</i>	4.0 (6%)	2.9 (4%)	3.8 (6%)	7.1 (10%)	13.3/20%	13.1/19%	13.3/20%	3.3/5%	6.8/10%		
<i>E. caeruleocauda</i> ^b	4.6 (6)	0	0	1.7 (4)	9.6 (39)	8.5 (34)	1.4 (6)	0	5.3 (11)		
<i>E. cyanura</i> ^b	0	0	0	4.6 (24)	3.7 (38)	3.2 (35)	0.3 (3)	0	0		
<i>E. impar</i> ^b	0	2.5 (23)	0.5 (7)	1.4 (33)	0.8 (37)	0	0	0	0		
<i>E. jakati</i>	1.0 (2)	0	0	3.1 (18)	1.9 (20)	2.3 (29)	0.6 (6)	0	4.2 (25)		
<i>E. ponapea</i>	0	0.4 (<1)	0.5 (<1)	25.3 (64)	1.7 (7)	5.8 (28)	0	0	0		
<i>Eugongylus albofasciolatus</i>	0	0	0	0	3.0 (13)	0	14.8 (64)	21.2 (23)	0		
<i>Lamprolepis smaragdina</i>	0	0	0	0.1 (10)	0.4 (50)	0.2 (20)	0.1 (10)	0	0.2 (10)		
<i>Lipinia noctua</i>	2.5 (11)	0	2.4 (10)	1.3 (10)	1.4 (19)	1.8 (24)	0	0	3.5 (26)		
	0	0	0	0	0	0	0.1 (100)	0	0		

^aDisturbed forest and secondary vegetation.^bObservations confined to specimens collected.

(*Cyathea* sp.) in high elevation rainforest (site 62). J. Vindum (pers. comm.) collected many in the leaf axils of low-growing palms at about 300–400 m elevation in native forest north of Kupwuriso, but he did not encounter any in secondary growth at lower elevations. Additionally, I collected five and saw several others on rock ledges on Lenger Island, suggesting the species may be more numerous locally in similar habitats on the main island.

Perochirus ateles.—The Micronesian gecko ranges throughout the islands of Micronesia (Brown 1976) and is uncommon to locally common on Pohnpei. It occurs in areas of human habitation, but not where *Hemidactylus frenatus* is well-established; I did not record any in Kolonia. Most of the specimens I collected were on the walls of buildings or beneath flaking bark on living and dead trees in disturbed lowland forest and atoll forest, often occurring syntopically with *Gehyra oceanica*. It was especially numerous at the Temwen Elementary School and inside a disused, windowless, cement building on Lenger Island. J. Vindum and S. Turpie collected 13 in forest at an elevation of 1,100–1,400 feet (CAS 159763–159788) and 26 others (CAS 159795–159807) at 1,400–1,800 feet, all on a ridge north-northwest of Kupwuriso on 15 February 1986.

Skinks

Emoia boettgeri.—Boettger's skink is endemic to the Caroline and Marshall islands in eastern Micronesia (Brown 1991). It is one of the most common lizards on Pohnpei, being most numerous in agroforest, disturbed forest, and secondary vegetation (Table 3). It usually occurs on the forest floor in areas where the understory is sparse and where patches of light have filtered through the canopy. I often found it in recently disturbed sites, including where pigs have rooted through most of the ground cover, and it is one of the few species I observed regularly in mangroves.

Emoia caeruleocauda.—The Pacific blue-tailed skink is widespread among the Pacific Islands, (Brown 1991, Allen 1995), and it is one of the most common lizards on Pohnpei, occurring mainly in disturbed habitats. It usually occurs on the ground, and less frequently 1–2 m high in the vegetation. The larger (older) individuals of both sexes tend to become phaeochromic; brown pigmentation often obscures the dorsal stripes, and the tail is brown in contrast to blue or blue-gray in the young. Of the 140 specimens for which I recorded tail color, 72 (51%) were brown.

Emoia cyanura.—The Azure-tailed copper-striped skink is widespread in the Pacific (Ineich & Zug 1991, Adler 1995), but scarce to uncommon on Pohnpei and unrecorded on the lagoon islands. It occurs mainly on the ground in open, shrubby, disturbed habitats, with 70% of the specimens collected during this study coming from ruderal areas, disturbed forest, and secondary vegetation. It is one of the few lizards I observed in grasslands and in freshwater marshes. In the marshes it was most numerous in leaf litter beneath pandanus trees. I observed it occasionally on the screens and walls of buildings, but not during any of the census counts. Its absence on lagoon islands is unexpected as it is often common in

sparse strand on many of the outlying atolls, including Mokil and Pingelap (Buden 1995), Pakin (Buden 1996), and Sapwuahfik (Buden, in press).

Emoia impar.—The blue-tailed copper-striped skink is widespread in the Pacific (Adler et al. 1995), and it is common on Pohnpei and its lagoon islands. It occurs mainly on the ground and 1–2 m high in the vegetation. It is broadly syntopic with *E. caeruleocauda*, but is much more numerous in atoll forest. In the rainforest, *E. impar* often is more numerous in the open, more sparsely vegetated areas such as rocky streamsides and places where trees have recently fallen, creating openings in the canopy, whereas *E. caeruleocauda* is more abundant in shade.

Emoia jakati.—The Jakati skink occurs in the Moluccas, New Guinea, the Bismarck Archipelago, Solomon Islands, and Micronesia (Brown 1991). It is common on Pohnpei, being especially numerous in open, weedy or sparsely vegetated areas, and it is the only lizard I observed regularly on groomed lawns. It is seldom seen in shady forest, but occurs in disturbed forest and agroforest where the understory is sparse and ample light penetrates the open canopy. I observed *E. jakati* occasionally on most of the lagoon islands, but its apparent absence from atoll forest on Na, Nahpali, and Nahlap islands is somewhat unexpected as it occurs in this habitat on the outlying atolls (Buden 1995, 1996a, 1996b, in press).

Emoia ponapea.—The Pohnpei Island skink is the only reptile endemic to Pohnpei. It inhabits mainly undisturbed forest at moderate to high elevations, but occurs in small numbers in agroforest, disturbed native forest, and secondary vegetation in the lowlands. It is unrecorded on the lagoon islands. *E. ponapea* is most numerous in the cloud forest above about 600 m, and it is the only lizard observed regularly at this elevation. I recorded a maximum observation rate of 96/hour (48 counted in 30 minutes) near the summit of Dolen Uhd (site 14) on 19 June. It occurs on the forest floor and is often seen basking in small patches of light that have filtered through a predominately closed canopy. When disturbed it usually seeks shelter in the leaf litter. Kiester (1982) did not see other species of *Emoia* in areas occupied by *E. ponapea*, but I found it syntopic with *E. boettgeri*, *E. caeruleocauda*, and *E. impar* in low-to mid-elevation rainforest. *E. ponapea* has 13 premaxillary teeth compared with 11 in all other members of the genus, and it does not appear to be closely related to any other Micronesian skink (Kiester 1982). Its unique morphology suggests a long period of time in isolation on Pohnpei.

Eugongylus albofasciolatus.—The reclusive litter skink occurs in the Moluccas, New Guinea, Bismarck Islands, Solomon Islands and Micronesia (McCoy 1980, Adler 1995). It apparently is uncommon on Pohnpei, but its secretive habits and tendency to seek cover when disturbed make assessment of status difficult, and it probably is more numerous than the scanty records indicate. *E. albofasciolatus* typically occurs on the ground, rarely on tree trunks (I saw one about 2 m high in the crotch of a large mangrove.), and it has a predilection for dense vegetation or where there is readily available shelter under natural or man-

made piles of debris (e.g., paper, wood, cans, leaves, heaps of coconut husks). I found it active throughout the day, even on bright, sunny days, as well as during predawn and early evening hours. It is recorded as mainly crepuscular or nocturnal in Solomon Islands (McCoy 1980) and on Kosrae in Micronesia (Rodda 1991). Most of my records are from the lowlands, but I observed one in cloud forest at Kupwuriso (site 7), and the most I have seen in one day is five on Lenger Islands (site 54). Its large, stocky body (total length to about 30 cm), and sinuous, snakelike movements probably contribute to its fearsome reputation among local islanders, many of whom believe it is poisonous, and it has, or has had a role in the practice of black magic.

Lamprolepis smaragdina.—The green tree skink is widely distributed from Taiwan and the Philippines southward and eastward through the Indo-Australian Archipelago to northern Australia (Cape York), the Solomon Islands, Santa Cruz Islands, and to easternmost Micronesia (Greer 1970, Manthey 1985). This large (snout-vent length about 100 mm), diurnal, insectivorous, and predominately arboreal skink is common throughout the lowlands of Pohnpei. It usually is seen perched about 1–5 m high on tree trunks in open sun-exposed areas, less frequently in vines and shrubs, and hardly ever on the ground. It is apparently scarce or absent in upper montane forest as all of my records are below about 200 m. I counted an average of 2.5/km over a distance of 6.5 km along roadsides in Kolonia on 4 June, and averaged 6.5/km along more rural roadways in southern Madolenihmw (vicinity of sites 23, 30, 33, and 43). I often saw green tree skinks feeding at night on insects attracted to lights mounted on tree trunks at the College of Micronesia, Kolonia campus. Other examples of predominately diurnal lizards opportunistically expanding into a “night light” niche (sensu Schwartz & Henderson 1991) are given by McCoid and Hensley (1993).

Of the 33 individuals for which I recorded body orientation, 23 (70%) were facing down the trunk and the 10 others were facing up. Among the 85 for which I recorded dorsal coloration, 51 (61%) were distinctly green, 7 (8%) were dark brown, and the 26 others (30%) were intermediate (brownish green, greenish brown, or yellowish brown). Coloration and pattern vary both between and within the Micronesian populations (Perry & Buden 1999, Buden in press).

Lipinia noctua.—The moth skink is one of the most widely distributed skinks in the Pacific (Adler 1995, Gibbons, 1985, Zweifel 1979), but it is scarce on Pohnpei. Marshall (1957) recorded it during the mid-1950s. R. Crombie (pers. comm.) and G. Pregill collected one in the leaf axil of a palm near Nett Point (peninsula east of Kolonia) on 6 July 1994, and I collected one on a large rock in rainforest at Lipwentiac (site 60). This species is both terrestrial and arboreal and shows considerable variation in coloration and pattern, although adults from the Pacific Islands typically have a distinct occipital spot and a persistent but less bright vertebral stripe (Zweifel 1979). The one I collected at Lipwentiac was brown above and more closely resembled a dark *E. ponapea*. Kiester (1983) considered *L. noctua* nocturnal, Rodda (1991) reported it as crepuscular, and McCoy (1980), Lambertson (1987), and Zug (1991) indicate it is mainly diurnal.

The Nett Point and Lipwentiac specimens mentioned above were collected on exposed rock during the day.

Monitor Lizards

Varanus indicus.—Monitor lizards were introduced to Pohnpei and numerous other Micronesian islands during the Japanese occupation probably to control rats or provide an alternative source of food, or both (Fisher 1948, Weckler 1949, Jackson 1962, Uchida 1967, Marshall 1975). How widespread *V. indicus* may have been on Pohnpei in the past is unknown, but in recent years it has been recorded regularly on the main island only in mangroves near Sapwalap (site 69 and vicinity), and only sporadically elsewhere. Sapwalap residents report seeing as many as five or six per day. There are also unconfirmed reports of occasional sightings in the immediately adjacent upland forest. I collected one and saw another freshly killed near Diadi (site 69) on 4 August. Monitors are reported to occur also on Nahlap Island (site 50), but I saw none during a one-day visit on 19 July. *V. indicus* is an opportunistic predator (McCoid & Witteman 1993) and resident Pohnpeians told me that monitors feed mainly on crabs, and often visit areas of human habitation to prey on chicks and eggs. A resident of Diadi reported seeing one carrying a piglet.

SNAKES

Blind Snakes

Ramphotyphlops braminus.—The Brahminy blind snake is native to Africa and Asia but has been spread by man to many areas of the world, including many Pacific Islands (Gibbons 1985). All known specimens are female and reproduction is presumably parthenogenetic (McCoy 1980). *R. braminus* is the only snake resident on Pohnpei, although other species have been recorded as accidentals. How long ago *R. braminus* was introduced to Pohnpei is unknown, but the Bishop Museum has specimens collected there as early as 1936 (C. Kishinami pers. comm.). It is probably common on Pohnpei, but is seldom seen above the ground. Most of the sightings are by farmers and construction workers who expose the animal when they are digging in the soil, where it feeds on termites and other small insects. One that I found dead on the side of a trail on Mwahnd Peidi is the first record for a Pohnpei lagoon island (Thomas 1997).

Colubrids

Boiga irregularis.—A brown tree snake found dead on a cargo container ship from Guam at dockside in Kolonia on 3 November 1994 was deposited in Smithsonian Institution collections (USNM 339786); it is the first documented record from the Federated States of Micronesia (T. Fritts pers. comm.). Pohnpei authorities are justly concerned over the accidental introduction of this species, which has caused ecological disaster in Guam, being presumably responsible for the extirpation of many native land birds, and negatively impacting other vertebrate species as well (McCoid 1991, Fritts & Rodda 1998).

Dendrelaphis sp.—A snake found alive in the Kolonia Elementary School grounds during the late 1980s was kept in preservation for several years before being donated to Smithsonian collections (USNM 506906). T. Fritts identified it as a member of the genus *Dendrelaphis*, commonly called tree snakes or bronze-backs, which includes several species ranging from Southeast Asia through Indonesia to Australia (Mehrtens 1987).

Lycodon aulicus.—A wolf snake was collected in a shipment of lumber from the Philippines (via Guam) in August or September 1986 (Fritts 1987), and another (USNM 28246) is cataloged as collected on Pohnpei by Dr. Bartels around the turn of the century, but see under hypothetical records.

Sea Snakes

Hydrophis belcheri.—Crombie (unpublished ms) reported that a Belcher's sea snake in Smithsonian collections (USNM 28245) is cataloged as having been collected at Pohnpei by Dr. Bartels around the turn of the century. The record is included here on tenuous grounds as this species occurs mainly in Indonesia and the South Pacific, having been recorded in the Philippines, Sulawesi, New Guinea, Fiji, Kiribati, and the Solomon Islands (McCoy 1980). The Pohnpei record may have been mislabeled as to locality—see remarks under hypothetical records.

Laticauda colubrina.—Smith (1926) reported one specimen of the banded sea snake collected on Pohnpei and deposited in the Zoological Museum Berlin (No. 9138). There are no other confirmed records. In recent years there have been unconfirmed sightings of banded "sea snakes" in Pohnpei lagoon, but the possibility of these being misidentified as similarly patterned eels is not excluded. The banded sea snake "is widely distributed on the northern Indian Ocean and the Pacific Ocean" (Guinea 1994), and its occurrence in Pohnpei waters is not completely unexpected.

Pelamis platurus.—Two yellow-bellied sea snakes caught alive in mangrove channels at Temwen in southern Pohnpei in 1994 (USNM 494386) and in April 1995 (College of Micronesia, field tag X843) are the only records for the main island. Another found alive on a beach at Nukuoro Atoll in September 1998 is the first record for any of the eight outlying Pohnpei State atolls. The Nukuoro specimen was poorly preserved when I examined it in the local (Pohnpei) office of the Environmental Protection Agency; its present condition and whereabouts are unknown. *P. platurus* is the only truly pelagic sea snake and it ranges widely throughout the Pacific (Guinea 1994).

Hypothetical Records

Among the herpetological specimens in the Smithsonian collections are a Tokay gecko *Gekko gekko* (USNM 28247), and a reticulated python *Python reticulatus* (USNM 28249), both cataloged as being from Pohnpei and collected by Dr. Bartels around the turn of the century. These predominately Southeast

Table 4.—Overall status^a of reptiles on Pohnpei, including lagoon islands and surrounding waters.

Species	Status	Species	Status
Crocodiles		<i>E. cyanura</i>	S-UC
<i>Crocodylus porosus</i>	V	<i>E. impar</i>	C
Turtles		<i>E. jakati</i>	FC-C
<i>Chelonia mydas</i>	FC	<i>E. ponapea</i>	C
<i>Dermochelys coriacea</i>	V	<i>Eugongylus albofasciolatus</i>	S-UC
<i>Eretmochelys imbricata</i>	UC-FC	<i>Lamprolepis smaragdina</i>	C
<i>Trachemys scripta</i>	V	<i>Lipinia noctua</i>	S
Geckos		Monitor lizards	
<i>Gekko gecko</i>	Hyp	<i>Varanus indicus</i>	S
<i>Gehyra mutilata</i>	UC	Snakes	
<i>G. oceanica</i>	FC-C	<i>Ramphotyphlops braminus</i>	C?
<i>Hemidactylus frenatus</i>	C ^b	<i>Python reticularis</i>	Hyp
<i>Lepidodactylus lugubris</i>	C	<i>Boiga irregularis</i>	V
<i>L. moestus</i>	S?	<i>Dendrelaphis</i> sp.	V
<i>Nactus pelagicus</i>	S-UC	<i>Lycodon aulicus</i>	V
<i>Perochirus ateles</i>	UC-FC	<i>Hydrophis belcheri</i>	V
Skinks		<i>Laticauda colubrina</i>	V
<i>Emoia boettgeri</i>	FC-C	<i>Pelamis platurus</i>	S?
<i>E. caeruleocauda</i>	C		

^aC = Common, FC = Fairly common, Hyp = Hypothetical, UC = Uncommon, S = Scarce, V = Vagrant.

^bIn areas of human habitation.

Asian/Indonesian species are very unlikely to have occurred on Pohnpei. Crombie (unpublished ms) suggested they may have originated in the Philippines where all other species in the Bartels collection are known to occur. In tracing the history of this collection, Crombie (unpublished ms) found that Bartels presented his material to members of the “Albatross” South Sea Expedition at Jaluit in the Marshall Islands on 12 January 1900. Crombie noted that the original catalog entry was illegible and that “Ponape” was pencilled in later; marginal notes indicated an unsuccessful attempt by Leonard Stejneger to clarify the locality with members of the expedition.

Discussion

Eighteen species of terrestrial reptiles are resident on Pohnpei, including a blind snake, a monitor lizard, seven geckos, and nine skinks. Most of them are common on the main island and widely distributed among the lagoon islands (Tables 2 and 4). The Pohnpei Island skink, *Emoia ponapea*, is the only endemic species. It occurs in forest from near sea level to the tops of the highest mountains, being especially numerous and the only reptile regularly encountered in the cloud forest, above about 600 m in elevation, but it is unrecorded on the lagoon islands. *E. ponapea* probably has had a long history of isolation on Pohnpei, possibly acquiring its species characteristics in situ from an as yet unknown source. It does not appear to be especially closely related to any other member of the genus (Kiestler 1982). *Lepidodactylus moestus*, *Perochirus ateles*, and *Emoia boettgeri* occur outside of Pohnpei on at least two or more major islands or island groups elsewhere in Micronesia; the other species are more widespread in the Pacific.

The monitor lizard may have been introduced during the early part of the century, and the house gecko appears to be a recent adventitious species unknown prior to 1986. To what extent other species arrived naturally or by human intervention is unknown. Crombie & Steadman (1986) suggest that nearly all lizards on remote Pacific Islands may have arrived by deliberate or inadvertent human activity; but interpretations of recent studies on genetic variation suggest that natural dispersal among Pacific Island lizards may be more prevalent than previously thought (Fisher 1997). Most of the reptiles on Pohnpei are numerous in disturbed habitats, including edificarian, ruderal, agroforest, disturbed native forest, and secondary vegetation. However, the monitor lizard has a predilection for mangroves, and *Emoia ponapea* occurs mainly in montane forest.

In addition to these 18 terrestrial residents, the green turtle (*Chelonia mydas*) and the hawksbill turtle (*Eretmochelys imbricata*) occur in Pohnpei area waters, and a crocodile, a freshwater turtle, and three species of sea snakes have been recorded. There is little quantitative information on sea turtles on Pohnpei, but anecdotal accounts by local residents indicate turtles were more abundant in the past. Bascom (1965) stated turtles have long been harvested for food and shell and that "trade in raw turtle shell and shell crafted items is old on Ponape but has never been large." He further stated that the Japanese "fished for turtle and kept live turtles in pens built on the reef and sand beach of Langer Island in the Colony harbor." Although commercial trade in turtle shell products no longer occurs, subsistence hunting persists, but laws regulating the take are not usually followed and are not strictly enforced.

The fauna of small, remote islands, such as Pohnpei are especially vulnerable ecologically; they possess few and limited buffers against the threat of habitat modification, including the negative impacts of introduced exotics. At the present time, excluding the exploitation of sea turtles, no terrestrial reptile species on Pohnpei appears to be endangered or threatened by current levels of human activity. Threats can escalate rapidly, however, as the human population grows

and places greater pressure on the limited land resources. The increasing air and sea traffic between Pohnpei and world ports also increases the risk of introducing potentially harmful exotics.

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