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#### CHECKLIST AND BIBLIOGRAPHY OF NICARAGUAN CHIROPTERA

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More than a decade has elapsed since publication of a checklist and bibliography for the bats of Nicaragua (Baker and Jones, 1975). In that period, the number of species reported from the country has increased from 77 to 85, and several important research works have appeared, some dealing with karyologic, electrophoretic, and related studies. The present compilation is a survey of the relevant literature through 1985.

Following is a list of the taxa of bats currently known to occur in Nicaragua. For each taxon, citations are given to publications that are primary sources of information on Nicaraguan material; included are some that might otherwise be overlooked for primary information, such as Hall (1981), in which there are figures of crania and rami of specimens from the country, and Swanepoel and Genoways (1979), in which selected cranial measurements of Nicaraguan specimens are recorded. There also are a few citations to papers on ectoparasites. Normally, passing references simply to "Nicaragua," even when museum catalog numbers were listed (see, for example, Forman, 1968, 1972, and Phillips, 1971), are not included. In some instances, bats have been reported in the literature under a scientific name different from the one used here and we have noted such names where it seemed appropriate to do so.

Arrangement of genera generally follows Hall (1981). Species and subspecies are listed alphabetically. Geographical and ecological considerations suggest to us that, with the advent of

additional field exploration, more than 100 species of bats ultimately will be found to occur in Nicaragua.

#### Family EMBALLONURIDAE

- Rhynchonycteris naso* (Wied-Neuwied, 1820).—J. A. Allen (1908:669, 1910:110), Sanborn (1937:327), Davis *et al.* (1964:375, 379).
- Saccopteryx bilineata* (Temminck, 1838).—J. A. Allen (1910:110), Sanborn (1937:331), Jones (1964:506).
- Saccopteryx leptura* (Schreber, 1774).—Davis *et al.* (1964:375), Jones (1964:506), Jones *et al.* (1971:3).
- Cormura brevirostris* (Wagner, 1843).—J. A. Allen (1910:110—specimens listed as *Peropteryx canina* from Peña Blanca; see Sanborn, 1937:348), Miller (1924:38), Sanborn (1937:349), Goodwin (1942c:119).
- Peropteryx kappleri kappleri* Peters, 1867.—J. A. Allen (1908:669, 1910:110—as *P. canina*), Sanborn (1937:344).
- Peropteryx macrotis macrotis* (Wagner, 1843).—Jones *et al.* (1971:3).
- Centronycteris maximiliani centralis* Thomas, 1912.—Baker and Jones (1975:1), Greenbaum and Jones (1978:2).
- Balantiopteryx plicata plicata* Peters, 1867.—Jones *et al.* (1962:152), Davis *et al.* (1964:375), Jones (1964:506).
- Cyttarops alecto* Thomas, 1913.—Baker and Jones (1975:2).
- Diclidurus albus virgo* Thomas, 1903.—Alston (1879-82:30), Ojasti and Linares (1971:426).

#### Family NOCTILIONIDAE

- Noctilio albiventris minor* Osgood, 1910.—Goodwin (1942c:121, 1946:297), Davis *et al.* (1964:376), Kohls *et al.* (1965:344), Wenzel *et al.* (1966:578), McDaniel (1970:818), Jones *et al.* (1971:3), Davis (1976:700), Dolan and Carter (1979:646).
- Noctilio leporinus mastivus* (Vahl, 1797).—Davis *et al.* (1964:376), Jones *et al.* (1971:4), Davis (1973:871).

#### Family MORMOOPIDAE

- Pteronotus davyi davyi* Gray, 1838.—Jones *et al.* (1971:4), Smith (1972:100).
- Pteronotus gymnotus* (Wagner, 1843).—Goodwin (1942a:88, 1946:299, 1953:246), Jones *et al.* (1971:5), Gerber and Leone (1971:161), Smith (1972:106), Hall (1981:95), Sites *et al.*

(1981:466). The species name *suapurensis* was used in earlier references to this bat.

*Pteronotus parnellii mesoamericanus* Smith 1972.—Jones *et al.* (1971:5—as *P. p. fuscus* in part), Smith (1972:74).

*Pteronotus parnellii rubiginosus* (Wagner, 1843).—Miller (1902:402), Rehn (1904:203), Jones *et al.* (1971:5—as *P. p. fuscus* in part), Smith (1972:76).

*Pteronotus personatus personatus* (Wagner, 1843).—Baker and Jones (1975:2).

#### Family PHYLLOSTOMIDAE

*Micronycteris brachyotis* (Dobson, 1879).—Goodwin (1946:302—as *M. sylvestris*), Sanborn (1949:224—as *M. platyceps*), Goodwin and Greenhall (1961:231).

*Micronycteris hirsuta* (Peters, 1869).—Valdez and LaVal (1971:247), Baker *et al.* (1973b:9), Baker and Jones (1975:3), Swanepoel and Genoways (1979:87), Arnold *et al.* (1983:302).

*Micronycteris megalotis mexicana* Miller, 1898.—G. M. Allen (1929:130), Jones *et al.* (1971:5), Baker and Jones (1975:4), Swanepoel and Genoways (1979:87).

*Micronycteris megalotis microtis* Miller, 1898.—Miller (1898:328, 1900:154), Lyon (1906:371), Lyon and Osgood (1909:263), J. A. Allen (1910:110), Poole and Schantz (1942:133), Jones *et al.* (1971:6), Baker and Jones (1975:2).

*Micronycteris minuta* (Gervais, 1856).—Valdez and LaVal (1971:248).

*Micronycteris nicefori* Sanborn, 1949.—Baker and Jones (1975:3).

*Micronycteris schmidtorum* Sanborn, 1935.—Davis *et al.* (1964:378), Baker and Jones (1975:3), Arnold *et al.* (1983:302).

*Micronycteris sylvestris* (Thomas, 1896).—Arnold *et al.* (1983:302).

*Macrophyllum macrophyllum* (Schinz, 1821).—Davis *et al.* (1964:378), Jones (1964:506), Swanepoel and Genoways (1979:86).

*Tonatia bidens bidens* (Spix, 1823).—Greenbaum and Jones (1978:2), Swanepoel and Genoways (1979:86).

*Tonatia minuta* Goodwin, 1942.—Goodwin (1942b:205, 1946:305, 1953:246), Davis and Carter (1962:67), Valdez and LaVal (1971:248), Jones *et al.* (1971:7), Baker and Jones (1975:4), Koopman (1976:45), Greenbaum and Jones (1978:2), Hall (1981:109), Arnold *et al.* (1983:302). Most records listed as *T. nicaraguae* (but see Koopman, *loc cit.*).

- Tonatia silvicola centralis* Davis and Carter, 1978.—Davis and Carter (1978:7), Hall (1981:110), Schmidly and Jones (1984:6).
- Mimon crenulatum keenani* Handley, 1960.—Greenbaum and Jones (1978:4).
- Phyllostomus discolor verrucosus* Elliot, 1905.—Jones (1964:507), Wenzel *et al.* (1966:598), Gerber and Leone (1971:161), Swanepoel and Genoways (1979:89), Hall (1981:114).
- Phyllostomus hastatus panamensis* J. A. Allen, 1904.—Goodwin (1942c:126), Wenzel *et al.* (1966:597), Jones *et al.* (1971:8), Swanepoel and Genoways (1979:89).
- Trachops cirrhosus coffini* Goldman, 1925.—Carter *et al.* (1966:491), Jones *et al.* (1971:8), Swanepoel and Genoways (1979:90).
- Chrotopterus auritus auritus* (Peters, 1856).—Jones *et al.* (1971:9), Gerber and Leone (1971:161), Swanepoel and Genoways (1979:86).
- Vampyrum spectrum nelsoni* (Goldman, 1917).—Gray (1844:18), Dobson (1878:471), Alston (1879-82:39), J. A. Allen (1910:111), Goldman (1917:116), Goodwin (1946:310), Swanepoel and Genoways (1979:90).
- Glossophaga commissarisi* Gardner, 1962.—Miller (1913b:419—at least the specimens from Zelaya), Davis *et al.* (1964:380), Jones (1964:507), Swanepoel and Genoways (1979:92), Hall (1981:121).
- Glossophaga leachii* (Gray, 1844).—Gray (1844:18), Dobson (1878:501), Alston (1879-82:44), Carter and Dolan, (1978:38), Swanepoel and Genoways (1979:92), Webster and Jones (1980:2-4), Hall (1981:121). See Webster and Jones (1980) for taxonomic and nomenclatorial notes on this and the following species.
- Glossophaga soricina handleyi* Webster and Jones, 1980.—J. A. Allen (1910:111), Alvarez (1963:400), Davis *et al.* (1964:380), Starrett and de la Torre (1964:57), McDaniel (1970:805), Jones *et al.* (1971:3, 13, 28), Gerber and Leone (1971:161), Swanepoel and Genoways (1979:92), Webster and Jones (1980:4), Hall (1981:120).
- Lonchophylla robusta* Miller, 1912.—Baker and Jones (1975:4), Swanepoel and Genoways (1979:94).
- Anoura geoffroyi lasiopyga* (Peters, 1868).—McDaniel (1970:805), Jones *et al.* (1971:9).
- Choeroniscus godmani* (Thomas, 1903).—Handley (1966:86), Jones *et al.* (1971:9), Swanepoel and Genoways (1979:91).

- Lichonycteris obscura* Thomas, 1895.—Thomas (1895:57), Davis *et al.* (1964:380), Jones *et al.* (1971:10), Baker and Jones (1975:2), Carter and Dolan (1978:42), Swanepoel and Genoways (1979:93), Hall (1981:134).
- Carollia brevicauda* (Schinz, 1821).—Davis and Carter (1962:71— as *C. subrufa*), Davis *et al.* (1964:379— as *C. subrufa*), Pine (1972:43), Swanepoel and Genoways (1979:95).
- Carollia castanea* H. Allen, 1890.—Davis *et al.* (1964:379), Jones *et al.* (1971:10), Pine (1972:21), Swanepoel and Genoways (1979:95), Hall (1981:135).
- Carollia perspicillata azteca* Saussure, 1860.—Hahn (1907:112), J. A. Allen (1908:669, 1910:111), Davis *et al.* (1964:379), Starrett and de la Torre (1964:58), Gerber and Leone (1971:161), Pine (1972:71), Swanepoel and Genoways (1979:95).
- Carollia subrufa* (Hahn, 1905).—Jones *et al.* (1971:21), Gerber and Leone (1971:161), Pine (1972:29), Swanepoel and Genoways (1979:95).
- Sturnira lilium parvidens* Goldman, 1917.—Davis *et al.* (1964:379), Starrett and de la Torre (1964:59), Jones (1964:507), McDaniel (1970:819), Jones *et al.* (1971:13, 21), Gerber and Leone (1971:161).
- Sturnira ludovici ludovici* Anthony, 1924.—Jones *et al.* (1971:11), Swanepoel and Genoways (1979:101).
- Uroderma bilobatum convexum* Lyon, 1902.—Davis *et al.* (1964:382), Jones (1964:507), Davis (1968:695), Gerber and Leone (1971:161), Baker and McDaniel (1972:4), Baker *et al.* (1973a:428), Baker *et al.* (1975:141), Swanepoel and Genoways (1979:101—part), Baker (1981:297).
- Uroderma bilobatum molaris* Davis, 1968.—Davis *et al.* (1964:382), Davis (1968:697), McDaniel (1970:813), Jones *et al.* (1971:13), Baker and McDaniel (1972:4), Baker *et al.* (1973a:428), Swanepoel and Genoways (1979:101—part).
- Uroderma magnirostrum* Davis, 1968.—Davis (1968:680), Jones *et al.* (1971:11), Swanepoel and Genoways (1979:102), Hall (1981:142).
- Vampyrops helleri* Peters, 1866.—Davis *et al.* (1964:383), Jones (1964:507), McDaniel (1970:809), Valdez and LaVal (1971:248), Jones *et al.* (1971:11), Gerber and Leone (1971:161), Swanepoel and Genoways (1979:103).
- Vampyroides caraccioli major* G. M. Allen, 1908.—J. A. Allen (1910:112), Goodwin (1946:320), Jones *et al.* (1971:12), Swanepoel and Genoways (1979:102).

- Vampyressa nymphaea* Thomas, 1909.—Jones *et al.* (1971:13), Baker *et al.* (1973b:9), Swanepoel and Genoways (1979:102).
- Vampyressa pusilla thyone* Thomas, 1909.—Starrett and de la Torre (1964:60), Jones *et al.* (1971:13), Baker *et al.* (1973b:9), Baker and Jones (1975:2), Swanepoel and Genoways (1979:102), Hall (1981:148).
- Chiroderma villosum jesupi* J. A. Allen, 1900.—Jones *et al.* (1971:14), Gerber and Leone (1971:161), Greenbaum and Jones (1978:4).
- Ectophylla alba* H. Allen, 1892.—H. Allen (1892:441, 1898:267), Lyon and Osgood (1909:266), Poole and Schantz (1942:129), Goodwin (1942c:134, 1946:323), Goodwin and Greenhall (1962:4), Greenbaum and Jones (1978:5). Type locality (Río Segovia) placed in Comarca de El Cabo, Nicaragua, by Miller and Kellogg (1955:77).
- Artibeus inopinatus* Davis and Carter, 1964.—Davis and Carter (1964:120), Baker and Jones (1975:4), Swanepoel and Genoways (1979:97).
- Artibeus intermedius* J. A. Allen, 1897.—Starrett and de la Torre (1964:61), Jones *et al.* (1971:20), Gerber and Leone (1971:161), Davis (1984:12-13).
- Artibeus jamaicensis paulus* Davis, 1970.—Andersen (1908:266), Davis (1970b:121), Jones *et al.* (1971:20).
- Artibeus jamaicensis richardsoni* J. A. Allen, 1908.—Andersen (1908:267), J. A. Allen (1908:669), Elliot (1917:168), Goodwin (1953:249), Davis and Carter (1964:120), Davis *et al.* (1964:379), Starrett and de la Torre (1964:60), Davis (1970b:116), Jones *et al.* (1971:13), Gerber and Leone (1971:161), Swanepoel and Genoways (1979:97).
- Artibeus lituratus palmarum* J. A. Allen and Chapman, 1897.—Andersen (1908:279), Davis and Carter (1964:120), Davis *et al.* (1964:379), Swanepoel and Genoways (1979:97), Davis (1984:14).
- Artibeus phaeotis palatinus* Davis, 1970.—Davis (1970a:401), Jones *et al.* (1971:13), Gerber and Leone (1971:161), Swanepoel and Genoways (1979:97-98), Hall (1981:162), Koop and Baker (1983:3).
- Artibeus phaeotis phaeotis* (Miller, 1902).—Davis *et al.* (1964:379), Davis, (1970a:399).
- Artibeus toltecus hesperus* Davis, 1969.—Jones *et al.* (1971:14).
- Artibeus toltecus toltecus* (Saussure, 1860).—Andersen (1908:300), Davis (1969:28), Jones *et al.* (1971:15), Gerber and Leone (1971:161).

- Artibeus watsoni* Thomas, 1901.—Andersen (1908:290), Davis and Carter (1962:71), Davis (1970a:393), Jones *et al.* (1971:15), Swanepoel and Genoways (1979:98), Hall (1981:162), Koop and Baker (1983:3).
- Centurio senex senex* Gray, 1842.—Goodwin (1946:327—restricted type locality to El Realejo, Nicaragua), Jones *et al.* (1971:16), Watkins *et al.* (1972:22), Swanepoel and Genoways (1979:98).
- Desmodus rotundus murinus* Wagner, 1840.—J. A. Allen (1908:670, 1910:113), Jones *et al.* (1971:3), Gerber and Leone (1971:161), Greenbaum and Jones (1978:5), Swanepoel and Genoways (1979:105), Honeycutt *et al.* (1981:805).
- Diaemus youngii* Jentink, 1893.—Baker and Jones (1975:4), Cadena and Baker (1976:162), Greenbaum and Jones (1978:5), Honeycutt *et al.* (1981:805), McBee *et al.* (1985:404, 406).
- Diphylla ecaudata centralis* Thomas, 1903.—Jones *et al.* (1971:17), Swanepoel and Genoways (1979:106).

## Family NATALIDAE

- Natalus stramineus saturatus* Dalquest and Hall, 1949.—Jones *et al.* (1971:17).

## Family THYROPTERIDAE

- Thyroptera discifera abdita* Wilson, 1976.—Miller (1896:111, 1931:411), Goodwin (1946:330), Wilson (1976:307).

## Family VESPERTILIONIDAE

- Myotis albescens* (É. Geoffroy St.-Hilaire, 1806).—Miller and G. M. Allen (1928:203), Jones *et al.* (1971:18), LaVal (1973a:29).
- Myotis elegans* Hall, 1962.—Jones *et al.* (1971:18-19—as *M. nigricans* in part), LaVal (1973a:15).
- Myotis keaysi pilosatibialis* LaVal, 1973.—Jones *et al.* (1971:19—as *M. nigricans* in part), LaVal (1973a:25).
- Myotis nigricans nigricans* (Schinz, 1821).—Davis *et al.* (1964:379), McDaniel and Coffman (1970:223), Jones *et al.* (1971:19—in part), LaVal (1973a:10), Dolan and Carter (1979:646).
- Myotis riparius* Handley, 1960.—McDaniel (1970:804—as *M. nigricans*), Jones *et al.* (1971:19—also as *M. nigricans* in part, same page), LaVal (1973a:34).
- Eptesicus furinalis carteri* Davis, 1965.—Dolan and Carter (1979:645).

- Eptesicus furinalis gaumeri* (J. A. Allen, 1897).—Miller (1897:100), Davis (1965:234), Jones *et al.* (1971:20).
- Lasiurus borealis frantzii* (Peters, 1871).—Davis and Carter (1962:73), Baker and Jones (1975:4).
- Rhogeessa tumida* H. Allen, 1866.—J. A. Allen (1910:113), Goodwin (1958:3), Jones *et al.* (1971:20), LaVal (1973b:44), Bickham and Baker (1977:449, 453), Dolan and Carter (1979:646), Baker (1984:181), Baker *et al.* (1985:236).

#### Family MOLOSSIDAE

- Tadarida laticaudata yucatanica* (Miller, 1902).—Jones *et al.* (1971:21).
- Eumops auripendulus auripendulus* (Shaw, 1800).—Jones *et al.* (1971:22), Eger (1974:7, 1977:28), Greenbaum and Jones (1978:5).
- Eumops glaucinus glaucinus* (Wagner, 1843).—Eger (1977:42).
- Eumops underwoodi underwoodi* Goodwin, 1940.—Dolan and Carter (1979:646).
- Promops centralis centralis* Thomas, 1915.—Baker and Jones (1975:4).
- Molossus ater nigricans* Miller, 1902.—J. A. Allen (1908:670), Jones *et al.* (1971:22), Gerber and Leone (1971:161).
- Molossus bondae* J. A. Allen, 1904.—Miller (1913a:89), Dolan and Carter (1979:646).
- Molossus molossus aztecus* Saussure, 1860.—Felten (1957:14), Vaughan (1959:7—as *M. coibensis*), McDaniel (1970:818), Jones *et al.* (1971:23).
- Molossus pretiosus* Miller, 1902.—McDaniel (1970:814, 818-819), Jones *et al.* (1971:25), Hall (1981:253).
- Molossus sinaloae sinaloae* J. A. Allen, 1906.—Miller (1913a:89), Vaughan (1959:7—as *M. nigricans*), Goodwin and Greenhall (1964:13), Jones *et al.* (1971:27), Dolan and Carter (1979:646), Freeman (1981:10), Hall (1981:254).

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