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AN ENVIRONMENTAL INVENTORY OF
THE ROSEMONT AREA IN SOUTHERN ARIZONA

VOLUME I: THE PRESENT ENVIRONMENT



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Edited by

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INTRODUCTION

Between 1 July 1975 and 28 February 1977 a team of University of Arizona faculty conducted an environmental inventory of the Rosemont Area under contract with the Anamax Mining Company. The Rosemont Area, as defined in this report, is an area of approximately 25 square miles located 30 miles SE of Tucson, Pima County, Arizona (Fig. 1). A series of photographs representative of the Area appears between pages 122 and 153.

Anamax is currently attempting to obtain title to the Rosemont Area (by means of a land exchange), and the results of the present multi-disciplinary study will be used by the National Forest Service in preparation of an Environmental Impact Statement, as required by the National Environmental Protection Act. The information presented here is more comprehensive than that available for most environmental impact assessments; it includes all aspects of the present environment of a fairly extensive geographic area. Missing from this report, however, are the results of archaeological research conducted by the Arizona State Museum. This information will be submitted to Anamax as a separate report (see p. 233).

The original land exchange plans did not include Section 6 at the southwest edge of the study area (see Fig. 1), and the research contract specifically excluded the area east of Highway 83 and west of the ridge line. In most reports, information regarding these excluded areas was obtained primarily by extrapolation of data obtained from other parts of the study area. In certain cases, however (e.g., Hydrology), special attention to the excluded areas was considered necessary.

Volume II of this report will contain estimates of environmental impact and suggested mitigating actions.

INVERTEBRATES (OTHER THAN INSECTS) OF THE ROSEMONT AREA

Walter B. Miller

INTRODUCTION

A survey of the invertebrate fauna (other than insects) of the Rosemont Area has been conducted to determine what species occur there. The invertebrate groups studied were primarily the larger Arachnida and the Mollusca. No attempt was made to collect and identify any rotifers, tardigrades, nematodes, isopods, myriapods, and mites. Such invertebrates are either so small as to be widely dispersed by wind or so motile as to be widespread over large areas; the likelihood of finding any species endemic to the Rosemont area was not great enough to warrant the extensive effort required for their study.

On the other hand, a previous field survey for mollusks by Pilsbry (1939, Acad. Nat. Sci. Philadelphia, Monograph 3: 349) revealed the presence of one endemic species of land snail, namely Sonorella rosemontensis Pilsbry, whose type locality is listed as "northern end of the Santa Rita Mountains near Rosemont." Several field searches by the author and others in 1965 and 1966 failed to yield any specimens of S. rosemontensis on the east side of the Santa Rita Mountains in the vicinity of Rosemont, but specimens referable to that species were found in the rockslides immediately west and below the ridgecrest near Helvetia Pass. Accordingly, every effort was made to look for populations of this species in the Rosemont area; none was found.

METHODS OF STUDY

Twenty-four localities were selected for study within the Rosemont area as loosely defined at the beginning of the project. This area included several rockslides on the west side and immediately below the ridge crest. Although the localities were selected randomly to give maximum coverage of the area, efforts were made to select those habitats most favorable for mollusks and arachnids, such as rocky outcrops, talus slopes, and areas of relatively dense vegetation where dead leaves and logs provided a suitable microenvironment.

Large mollusks were obtained by quarrying into rockslides and rock outcrops where live specimens were found sealed to the deeper rocks. Microscopic species of mollusks were obtained by sifting large quantities of suitable litter such as leafmold or drift material deposited by local

drainage channels. Arachnids were collected from under rocks, fallen logs, agave and yucca clumps, and by sweeping vegetation with a net. Some were also found in the litter collected for microscopic mollusks.

Identification of the mollusks was verified, where necessary, by dissection of adult animals and examination of the reproductive anatomy. Identification of the arachnids was made initially in our laboratory from available keys and was verified ultimately by the arachnid experts, Mr. Vince Roth, Director of the Southwestern Research Station, and Dr. W. J. Gertsch.

RESULTS: THE CURRENT SITUATION

Only six species of mollusks were found in the Rosemont area, exclusive of any localities west of the ridge line. These species are as follow (code letters in parentheses):

- (Aa) Sonorella magdalenensis (Stearns)
- (Ab) Thysanophora horni (Gabb)
- (Ac) Glyphialinia indentata paucilirata (Morelet)
- (Ad) Gastrocopta ashmuni (Sterki)
- (Ae) Gastrocopta dalliana (Sterki)
- (Af) Gastrocopta pellucida hordeacella (Pilsbry)

Of the above species, only Sonorella magdalenensis has a relatively limited range, namely along both sides of the Santa Cruz Valley from Tumamoc Hill in the north to the vicinity of Nogales in the south and on into Sonora as far as the vicinity of Ures. It is a relatively large land snail, with an average shell diameter of 19 mm. It is relatively common in its range.

The other five species of land snails found in the Rosemont area are quite small to microscopic, with T. horni measuring about 4 mm in diameter while G. dalliana averages 1.8 mm in length and 0.8 mm in diameter. It is generally believed that such small snails are scattered extensively by wind currents. All of the five species above are found abundantly in Arizona, New Mexico, and Sonora, and some of them range considerably farther into Central America, the West Indies, and the eastern United States.

No specimens of Sonorella rosemontensis were found east of the ridge line, but in one locality, a rockslide immediately west of the ridge crest just south of the Helvetia road, several specimens referable to S. rosemontensis were found. Careful examination of shells and reproductive anatomies revealed no significant differences from S. walkeri Pilsbry and Ferriss, which is common farther south and at higher elevations in the Santa Rita Mountains, particularly in Florida, Madera, Josephine, and Gardner canyons. It is the opinion of the author that S. rosemontensis is at least conspecific with S. walkeri and may possibly be a synonym.

Thirty-six species of arachnids were identified at least to the level of genus; several specimens of Opiliones, Pseudoscorpiones, and Acarina (ticks) were also collected but could not be identified below the ordinal level by local experts. One species of Chilopoda was identified.

A list of the species of Arachnida and Chilopoda found in the Rosemont area is given below, with identification code letters preceding each name, and number of specimens collected listed in parenthesis after each name.

CLASS ARACHNIDA, ORDER ARANEAE, SUBORDER ORTHOGNATHA:

(Ba) Euagrus ritaensis Chamberlin & Ivie (1)

CLASS ARACHNIDA, ORDER ARANEAE, SUBORDER LABIDOGNATHA:

- (Bb) Agelenopsis sp. (1)
- (Bc) Apollophanes texanus Banks (1)
- (Bd) Callilepis sp. (1)
- (Be) Diguettia canities (McCook) (5)
- (Bf) Ebo sp. (1)
- (Bg) Europus sp. (1)
- (Bh) Filistata arizonicus Chamberlin & Ivie (6)
- (Bi) Frontinella pyrametila (Walckenaer) (6)
- (Bj) Haplodrassus sp. (1)
- (Bk) Herpyllus sp. (1)
- (Bl) Herpyllus propinquus Keyserling (3)
- (Bm) Latrodectus mactans (Fabricius) (1)
- (Bn) Loxosceles arizonica Gertsch & Mulaik (22)
- (Bo) Metaphidippus sp. (1)
- (Bp) Metepeira sp. (1)
- (Bq) Misumenops sp. (1)
- (Br) Olios fasciculatus Simon (1)
- (Bs) Pellenes sp. (6)
- (Bt) Peucezia viridans (Hentz) (1)
- (Bu) Physocycles tanneri Chamberlin (24)
- (Bv) Plectreurys tristis Simon (1)
- (Bw) Psilochorus rockefelleri Gertsch (30)
- (Bx) Schizocosa sp. (16)
- (By) Selenops sp. (7)
- (Bz) Steatoda sp. (2)
- (Ca) Tarentula kochi Keyserling (1)
- (Cb) Theridon sp. (1)
- (Cc) Trochosa sp. (1)
- (Cd) Xysticus sp. (2)
- (Ce) Zelotes sp. (1)
- (Cf) Zorocrates unicolor (Banks) (10)

CLASS ARACHNIDA, ORDER SCORPIONES

- (Da) Centruroides sculpturatus Ewing (1)
- (Db) Uroctonus huachuca (3)
- (Dc) Vejovis spinigerus (Wood) (2)
- (Dd) Vejovis vorhesi Stahnke (1)

CLASS CHILOPODA

- (Ea) Scolopendrida polymorpha Wood (4)

While many of the above specimens could not be identified to the species level, it was the opinion of the expert arachnologists that these were not likely to be rare endemic species. All are highly mobile and are likely to be found throughout the Santa Rita Mountains in similar habitats.

A description of the habitat for each locality investigated is listed below; localities are identified by date, sequence number, standard designation of sectional fraction, and approximate elevation in feet. The species found at each locality are listed by their code letters.

X-10-75-1, SW 1/4 NW 1/4 Sec. 36, T 18 S, R 15 E; elev. ca. 5500'. Small ravine off S. side of Wasp Canyon, leafmold under Garrya and clumps of dead agaves. Ac, Bw, Bi, Da.

X-10-75-2, NW 1/4 NW 1/4 Sec. 36, T 18 S, R 15 E; elev. ca. 6020'. Rocky ridgcrest. Aa, Bp.

X-10-75-3, SW 1/4 NW 1/4 Sec. 36, T 18 S, R 15 E; elev. ca. 5900'. NE-facing rockslide on E. side of ridge crest. Aa, Ab, Ac, Ad, Ae, Ba, By, Cd, Db.

X-10-75-4, NW 1/4 NE 1/4 Sec. 36, T 18 S, R 15 E; elev. ca. 5400'. Terraced excavation on S-facing slope. Bt.

X-11-75-1, NW 1/4 SE 1/4 Sec. 24, T 18 S, R 15 E; elev. 5500-5600'. NW-facing rockslide on W slope below ridge crest at summit of Helvetia-Rosemont road. Aa, Ab, Ac, Ad, Ae, Bm, Bw, Bx, By, plus Sonorella rosemontensis.

I-16-76-1, NE 1/4 NW 1/4 Sec. 32, T 18 S, R 16 E; elev. ca. 4820'. Riparian, along Barrel Canyon, 0.2 mi N of "V R Camp" (as marked on topo sheet). Ab, Bj, Bs, Bw, Ca, Cd, Ce, Cf.

I-16-76-2, Se 1/4 Se 1/4 Sec. 30, T 18 S, R 16 E; elev. ca. 4610'. Riparian, along Wasp Canyon, at junction of tributary wash. Ab, Bk, Bl, Bn, Br, Bu, Bw, Bx, Cf, Dc.

I-16-76-3, NE 1/4 NE 1/4 Sec. 31, T 18 S, R 16 E; elev. ca. 4930'. Rockslide in small cove above wash in Wasp Canyon. Only Opiliones and Acarina (mites).

I-16-76-4, NE 1/4 NE 1/4 Sec. 36, T 18 S, R 15 E; elev. ca. 5240'. Long slope with junipers and agaves. Bu, Bw.

I-16-76-5, NW 1/4 SW 1/4 Sec. 29, T 18 S, R 16 E; elev. ca. 4680'. SW-facing bare hillside above wash along Barrel Canyon road. Ab, Bk, Bw.

II-13-76-1, NE 1/4 NE 1/4 Sec. 25, T 18 S, R 15 E; elev. ca. 5380'. Ravine along Helvetia-Rosemont road, at a point 0.5 road miles easterly from ridge crest; limestone outcrops. Ac, Af, Bn, Bq, Bu, Cb.

II-13-76-2, SE 1/4 SW 1/4 Sec. 19, T 18 S, R 16 E; elev. ca. 5050'. Wash along Helvetia-Rosemont road, at a point 1.2 road miles easterly from summit; riparian. Aa, Ac, Ad, Ae, Bh, Bu, Bw, By, Db.

II-13-76-3, NW 1/4 NW 1/4 Sec. 29, T 18 S, R 16 E; elev. ca. 4800'. Riparian wash along Helvetia-Rosemont road, at a point 2.3 road miles easterly from summit. Bn, Bu, Bw.

III-12-76-1, SW 1/4 NE 1/4 Sec. 25, T 18 S, R 15 E; elev. ca. 5800-5900'. NW-facing rockslide, just below crest of ridge on W side of range. Aa, Ac, Ad, Ae, Af, Bu, Cc, plus Discus cronkhitei and one dead immature S. rosemontensis.

III-12-76-2, NW 1/4 NE 1/4 Sec. 36, T 18 S, R 15 E; elev. ca. 5410'. Terraced excavation on S-facing slope. Bc, Bs, Bx, Ea.

III-12-76-3, SE 1/4 SW 1/4 Sec. 30, T 18 S, R 16 E; elev. ca. 5100'. N-facing, fairly bare slope near shallow wash along tributary to Wasp Canyon. Bn, Cf.

III-12-76-4, center of line between NW 1/4 and SW 1/4, Sec. 30, T 18 S, R 16 E; elev. ca. 5340'. Flat excavation on bare crest of hillside. Opiliones only.

III-12-76-5, SE 1/4 NE 1/4 Sec. 30, T 18 S, R 16 E; elev. ca. 4900'. Riparian wash along Helvetia-Rosemont road in McCleary Canyon. Ab, Ac, Ad, Ae, Ea.

IV-23-76-1, NW 1/4 NW 1/4 Sec. 36, T 18 S, R 15 E; elev. ca. 6010'. W-facing, large igneous rockslide on W. slope of ridge immediately below ridge crest. Aa, Ab, Ac, Ad, Ae, Bu, By.

IV-23-76-2, NW 1/4 NW 1/4 Sec. 36, T 18 S, R 15 E; elev. ca. 6020'. Ridge crest. Bl, Bw, By, Dd.

IV-23-76-3, SW 1/4 NW 1/4 Sec. 36, T 18 S, R 15 E; elev. ca. 5950-6000'. NW-facing large rockslides on W. side and immediately below ridge crest. Aa (snails very scarce for this usually prolific habitat).

IV-23-76-4, center of NW 1/4 Sec. 19, T 18 S, R 16 E; elev. ca. 5320'. Crest of main ridge which runs E-W at this point. Ab, Bh, Bu, Bw, Db.

IV-23-76-5, NW 1/4 SE 1/4 Sec. 18, T 18 S, R 16 E; elev. ca. 4780'. Ravine running NE-SW across road; rock outcrops on both sides of narrow ravine. Aa, Bb, Bh, Bn, Bs, Bu, Bv, By.

V-23-76-1. Same loc. as I-16-76-5. Be, Bf, Bi, Bo, Bw, Bx.

V-23-76-2. Same loc. as I-16-76-1. Bd, Be, Bg, Bi, Bn, Bw, Bx, Cf.

V-23-76-3. Same loc. as I-16-76-2. Bh, Bx, Cf, Ea.

V-23-76-4. Same loc. as I-16-76-3. Bi, Bs, Bz.

SUMMARY AND CONCLUSIONS

The results of the survey of the Rosemont area reveal the invertebrate fauna to be extremely depauperate in numbers of specimens as well as in numbers of species. There are very few large rockslides to provide a proper habitat for the usual mollusks found in the southwest, and those slides that exist are either east-facing or south-facing, thereby exposed to considerable heat and desiccation. The elevation is too low for any representatives of the usually rich molluscan fauna found above 5500' in the Santa Rita Mountains. The arachnid fauna, likewise, consists of relatively few, common species. Cover is scarce and slopes are mostly barren and heavily grazed.

No specimens of Sonorella rosemontensis were found east of the ridge crest. On the west side of the ridge, and immediately below the crest, several specimens referable to that species were found in extensive rockslides, but careful examination of shell characteristics and anatomical features revealed no significant differences from Sonorella walkeri. It is concluded that S. rosemontensis is at best a subspecies and possibly only a synonym. Further investigations of foot proteins by electrophoresis may provide additional clarifying information.

As far as this survey is concerned, it is very evident that the Rosemont area does not contain any possibly endangered species of mollusks or arachnids.