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## NEVADA POPULATIONS OF *POLITES SABULETI* AND THE DESCRIPTIONS OF FIVE NEW SUBSPECIES

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*Polites sabuleti* is a widespread and variable species in western North America which has received relatively little study. At present, eight names are available for the variation within the species, of which three are considered synonyms (Miller and Brown 1981) as follows:

*Polites sabuleti sabuleti* (Boisduval 1852) — Type locality: not stated (undoubtedly somewhere in California)

*Polites sabuleti genoa* (Plotz 1883) — Type locality: Nevada

*Polites sabuleti tecumseh* (Grinnell 1903) — Type locality: Little Crabtree Meadow near Mt. Whitney, California

*Polites sabuleti chispa* (W. G. Wright 1905) — Type locality: Sierra Nevadas of central California

*Polites sabuleti chusca* (W. H. Edwards 1873) — Type locality: Arizona

*Polites sabuleti comstocki* Gunder 1925 — Type locality: El Centro, Imperial County, California

*Polites sabuleti ministigma* Scott 1981 — Type locality: 5-8 miles west Crestone, Saguache County, Colorado.

*Polites sabuleti margaretae* Miller and MacNeill 1969 — Type locality: southeast shore of La Paz Harbor, Baja California Sur, Mexico.

My studies of Nevada populations of this species indicated that this taxonomy was insufficient to express the variation here, and that a number of additional names were necessary in this state alone (Austin 1985). Further collections and interpretation and the discovery of a very distinct new phenotype makes this revision of the state's populations necessary. It is hoped that this will prompt further study on this interesting species elsewhere and eventually lead to a much needed species revision. In all, I examined over 2100 Nevada collected specimens and more than 1100 specimens from elsewhere. Size is given as mean length and range in mm of right primary from base to furthest extent (LFW). Sample size for measurements is 15 unless otherwise noted.

### NEVADA PHENOTYPES

Two of the names presented above do not apply to Nevada populations. *Polites sabuleti margaretae* is a salt marsh subspecies restricted to Baja California, Mexico (Miller and MacNeill 1969) with a similar phenotype in Sonora, Mexico (1 female, San Carlos Bay,

22 December 1938, leg. F. H. Rindge, AMNH); and *Polites sabuleti ministigna* is a montane taxon, apparently restricted to south central Colorado (Scott 1981). All other proposed names have bearing on Nevada populations. These are characterized in Table I and discussed below.

*Polites sabuleti sabuleti* (Boisduval)

Fig. 1

Boisduval (1852) described *Hesperia sabuleti* from at least a pair sent by Lorquin from California. Most likely, they were from the region of the gold fields, as Lorquin had not traveled as widely as he would in later years. No syntypes are among the type material purchased by Barnes from the Oberthür collection now at the USNM. Excellent reproductions of the supposed Boisduval types were published by Oberthür (1913). The pair of *P. sabuleti* illustrated are of the relatively widespread phenotype from west of the Sierra Nevada in California, and a reasonable restriction of the type locality can be to the general region between San Francisco and Eldorado County, California.

The following description of typical *Polites sabuleti sabuleti* (from Sutter and Plumas counties, California) will serve as a basis for comparisons with other populations discussed in this paper. Males are a medium-sized *P. sabuleti* (LFW=12.3mm., [11.8-13.1mm.]) and bright orange dorsally with sharply defined blackish-brown outer margins with the orange discal color extending distally along the veins producing a moderately "serrated" effect proximally. The costal and anal margins and the basal area of the secondaries are black. The ventral ground color is paler (more yellow) orange and is deepest in the cell of the primaries. A black mark occurs at the base (except on the costa) of the primaries extending narrowly to the outer margin along the inner margin. The outer margin pattern repeats that on the dorsum but is relatively heavily overscaled and thus a dark olive in appearance. The ventral secondaries have a clear yellow postmedian band usually extending as a patch distally. The outer margin is as dorsally but overscaled and thus yellowish-olive cut with yellow which lines the veins. The base of the discal cell and base of cell  $Cu_2-2A$  have distinct blackish marks. This combined pattern on the secondaries is referred to herein as the "cobweb" pattern. The fringes are pale yellow-orange. The genitalia of the male are illustrated in Fig. 6. The valvae are moderately covered with whitish to brownish "hairs". The genitalia are constant among specimens from Sutter and Plumas counties.

The large females (LFW=13.9mm., [12.9-14.8mm.]) are also bright orange above paling slightly to yellow-orange postmedially on the primaries. The black pattern is as on the male (but obviously lacking the stigma) and with two wedge-shaped black marks on the disc (base of cell  $Cu_1-Cu_2$ , middle of cell  $Cu_2-2A$ ) on the primaries. Ventrally, the primaries are as on the male but with less distal overscaling making the margins a darker olivish-brown, and the basal black is extended to include a repetition of the discal marks of the dorsum. The secondaries are largely olive-brown; the yellowish (slightly paler than on the male but definitely yellow and not cream or white) postmedian band is broad but does not extend proximally as a patch but rather as yellow veins (especially broadly on vein  $Cu_2$ ) and includes a yellow blotch at the end of the discal cell and usually at the base of cell  $Sc+R_1-R_2$ . Blackish marks occur as on the male and also proximal to the postmedian band in other cells as well. The veins are yellow distal to the postmedian band to the outer margin. The fringes are pale gray.

Some seasonal variation in phenotype occurs among at least some of the California multivoltine populations of *Polites sabuleti* (Shapiro 1974a, b). Early and late season specimens may look much like high elevation populations of *P. s. tecumseh* of the Sierra Nevada. I have not seen any obvious tendency of this sort among Nevada material.

Populations of nominate *Polites sabuleti* occur in suitable habitats at low to moderate elevations throughout most of California west of the Sierra Nevada outside of the Colorado River Valley. A somewhat paler (yellowish, especially on the ventral surface) phenotype occurs east of the Sierra Nevada north at least to the Bridgeport area of Mono County and extends in relatively isolated (often mid-elevation and rather uncommon where it occurs) colonies east into portions of southwestern and southcentral Nevada including

Nye, Esmeralda, and Mineral (Corey Peak) counties. North of here, similar phenotypes occur in the Walker, lower Carson, and Truckee river valleys northward to Pyramid Lake and the Kings and Quinn river valleys and eastward through much of the Humboldt River drainage (Fig. 5). These present phenotypes are retained as part of the variation of nominate *P. sabuleti*, all having bright orange males with well defined outer marginal bands, and largely orange females with a yellow postmedian band on the ventral secondaries. In Nevada, these populations are largely bivoltine with records from mid-May to late September with the principal flight in August. The habitats of the Nevada populations vary from hot alkaline flats in the valleys to grassy flats along rivers and in the vicinity of small isolated springs at middle elevations of the mountains. Oviposition has been noted on *Distichlis spicata* (L.) var *stricta* (Torr.) Beetle (Poaceae) in Churchill County.

Some of the included material may be different enough to recognize subspecifically when sufficient material is assembled. This also applies to other parts of the species range but a revision of this sort is far beyond the scope of the present study. A curious pallid population (Fig. 2) occurs within this distribution at the Beowawe Geysers on the Eureka/Lander county line. It is phenotypically similar to the pale central Nevada populations described below.

*Polites sabuleti genoa* (Plötz)

Fig. 2

Plötz (1883) described *Hesperia genoa* from at least a pair of Nevada specimens. Based on the name, it is reasonable to assume that the types were from somewhere near the first Nevada settlement of the same name where the species is locally common today. I thus restrict the type locality to the Carson River Valley in Douglas County, Nevada. The collector and location of the type are unknown. The original description is rather rambling and confused, but key points are "Oberseite... beim female vorherrschend braun." (dorsum of female predominantly brown), "Htfl. oben mit einem abgeschlossenen rothgelben Fleck in der Mittelzelle..." hindwing with enclosed orange spot in the middle cell) and "... besonders beim female — die Spitzflecken freilassend rostroth bestaubt." (apical spots of female overscaled with reddish). Plötz did not compare it with any other butterfly.

Topotypes (68 males, 69 females examined) of *Polites sabuleti genoa* are recognizably different from California and Nevada populations included in nominate *P. sabuleti*, and thus the name is herein raised from synonymy. The differences include several characters:

1. Nominate *P. sabuleti* have sharply defined dark margins on both dorsal wings. *P. s. genoa* margins are somewhat less serrated and usually "fuzzy" with much orange overscaling.
2. Nominate *P. sabuleti* females are generally orange and marked with black. *P. s. genoa* females are usually brownish-black and marked with pale orange; these markings are often whitish, especially proximal to the dark margin.
3. Nominate *P. sabuleti* females usually have the cell of the primaries largely orange, this area often extending to the subapical spots and connecting, at least narrowly, with the orange extending towards the posterior margin. On *P. s. genoa* females, the pale, often whitish, orange in the cell is restricted, occasionally wanting, and usually not connecting to the pale postmedian area.
4. On *P. s. sabuleti* males, the ventral cobweb pattern is yellow and usually distinct and sharply defined. On *P. s. genoa* males, this is pale yellow and often somewhat fuzzy, though discernable.
5. On *P. s. sabuleti* females, the ventral primaries are distinctly orangish with a brownish distal pattern. On *P. s. genoa* females, the tone is olivish or yellowish-olive with a darker olive distal pattern.
6. On *P. s. sabuleti* females, the ventral postmedian bands of both wings are distinctly yellow and broad. On *P. s. genoa* females, these are creamy-white and average narrower.

In size, males of *Polites sabuleti genoa* are rather small (LFW=11.4mm. [10.8-12.5mm]) and females are medium-sized (LFW=13.2mm., [11.8-14.4mm.]). The male genitalia are

virtually identical to those of the nominate subspecies (Fig. 6). *P. s. genoa* flies in two broods with records from mid-May to mid-October. Slight seasonal variation exists in *P. s. genoa*. Late spring specimens tend to be paler dorsally and ventrally than those from late summer and fall. The distribution of *P. s. genoa* is east of the Sierra Nevada in western Nevada through the upper Carson and Truckee river drainages (Fig. 5) where it occurs in valley marshes and in urban areas. Oviposition has been noted on *Distichlis spicata* (L.) (Poaceae) in Carson City.

Northward (northern Washoe County, Nevada, eastern Modoc County, California and into southern Oregon) is a phenotype of *Polites sabuleti* that is more orange dorsally and paler ventrally. This is described as:

***Polites sabuleti alkaliensis*, new subspecies**

Fig. 3

MALE. Size medium (LFW=12.2mm., [11.4-13.2mm.]) for species. Dorsum yellow-orange, margins blackish, strongly serrated and overscaled with ground color, tending very narrow on secondaries. Basal dark area of secondaries moderately developed and similarly overscaled. Ventral primaries yellowish-orange, more orange at base of cell; marginal band heavily overscaled, thus faint and pale olive color. Secondaries yellow-olive; postmedian band narrow, whitish-yellow and poorly contrasting. Fringes pale yellow-orange. Genitalia like nominate *P. sabuleti* (Fig. 6).

FEMALE. Size relatively small (LFW=13.2mm., [12.2-13.9mm.], N=9). Dorsal ground color as on male, slightly paler and yellowish postmedially on primaries and over ventral postmedian band on secondaries; dark margins narrow to wide, moderately serrated and moderately overscaled with ground color. Ventral surface as on male except more olivish, and postmedian of primaries distinctly paler yellowish. Postmedian of secondaries similarly narrow and whitish-yellow. Fringes pale gray.

TYPES. Holotype male — NEVADA: Washoe Co.; Granite Mts., Nev. 8A, 1.3 mi. W. Nev. 34, 8 August 1981, leg. G. T. Austin. Allotype female — same data as holotype. Paratypes (12 males, 8 females, all NEVADA: Washoe Co.; Granite Mts.) — 10 males, 6 females, same data as holotype; 2 males, 2 females, Nev. 34, 3.5 mi. S. Nev. 8A, 8 Aug. 1981, leg. G. T. Austin.

DEPOSITION OF TYPE MATERIAL. The holotype, allotype and 4 male and 2 female paratypes are deposited at the Nevada State Museum. One pair each of paratypes are to be deposited in the Allyn Museum of Entomology and the Los Angeles County Museum. The remaining paratypes are retained in the author's collection.

TYPE LOCALITY. NEVADA: Washoe County; Granite Mountains, (Fortynine Mountain), Nevada State Route 8A, 1.3 miles west of Nevada State Route 34, 5950', T42N, R19E, S8, located on USGS Vya, Nevada, 7.5' quadrangle.

OTHER SPECIMENS EXAMINED. CALIFORNIA: Modoc Co.; Buck Creek (1 male), Davis Creek, 17 Aug. 1930 (2 males). NEVADA: Humboldt Co.; Pine Forest Mts., Blue Lake Rd., 12 mi. SW Nev. 140, 22 Aug. 1970, leg. S. O. Mattoon (1 male). NEVADA: Washoe Co.; Granite Mts., Crutcher Canyon Rd. at Nev. 81, 8 Aug. 1981, leg. G. T. Austin (1 male); Granite Mountains, Crutcher Canyon Rd., 6.5 mi. N. Nev. 81, 19 June 1982, leg. G. T. Austin (1 male); Nev. 8A, 15 mi. E. Cedarville [California], 6000', 23 Aug. 1970, leg. S. O. Mattoon (1 female). OREGON: Baker Co.; Durkee, Cave Creek, 18 Aug. 1966, leg. J. H. Baker (9 males, 2 females); Baker, 4 Sept. 1938, leg. J. H. Baker (1 male, 6 females), 11 Sept. 1938, leg. J. H. Baker (1 female), 22 Aug. 1937, leg. J. H. Baker (2 males, 1 female), 12 Sept. 1937, leg. J. H. Baker (1 female), Baker, Spring Creek, 30 Aug. 1959, leg. J. H. Baker (1 male), 15 Aug. 1944, leg. J. H. Baker (9 males, 3 females), Durkee, 16 Aug. 1940, leg. J. H. Baker (2 males, 2 females). OREGON: Harney Co.; Emigrant Canyon, NW Burns, 18 Aug. 1964, leg. C. R. Crowe (1 male). OREGON: Lake Co.; 13 mi. SE Lakeview (2 males).

DISTRIBUTION AND PHENOLOGY. As presently conceived, *Polites sabuleti alkaliensis* occurs from extreme northwestern Nevada and northeastern California northward to east central Oregon (Fig. 5). It seems to have one principal brood in August and another of smaller numbers in June.

ETYMOLOGY. The butterfly occurs in a region containing many alkaline lakes with a number so named in both Washoe County, Nevada and Modoc County, California. Thus the name *Polites sabuleti alkaliensis*.

DIAGNOSIS AND DISCUSSION. *Polites sabuleti alkaliensis* resembles no other named taxon of the species. The male is similar in color dorsally to *P. s. genoa* but the marginal bands are more deeply serrated on both wings. *P. s. alkaliensis* is yellower ventrally rather than the darker olive of *P. s. genoa* and with less contrast. Females are largely orange and not blackish with whitish submarginally as on *P. s. genoa* and much paler ventrally with a less contrasting and narrower postmedian band. Both sexes are more yellow above than nominate *P. sabuleti* with the wing margins more overscaled (thus appearing paler), and females are usually without the prominent black discal marks on the primaries. Ventrally both sexes of *P. s. alkaliensis* have a yellower ground color, narrower and pale yellow to whitish (*vs.* yellow) postmedian band and a weakly contrasting pattern. No other described *P. sabuleti* approaches *P. s. alkaliensis* in color and pattern. Sufficient material does not exist to assess seasonal variation.

I include here, for now, populations occurring to east central Oregon. Males from Baker County, Oregon are nearly identical to Washoe County, Nevada males. Females from Baker County average considerably darker above and are somewhat darker below. Also included is one male from the Pine Forest Mountains, which is closer to *Polites sabuleti alkaliensis* than anything else. A female from the Jackson Mountains (Humboldt Co., Nevada) to the south is like nominate *P. sabuleti*. Eastward in Nevada, the geographically closest known *P. sabuleti* population is a totally different *P. sabuleti* described later. The few specimens I have seen from west of the Warner Mountains in California and Oregon seem to be nominate *P. sabuleti* (*e. g.*, see Klamath County, Oregon specimens figured in Dornfeld 1980).

#### *Polites sabuleti tecumseh* (Grinnell)

Fig. 2

Grinnell's (1903) *Pamphila sabuleti* var. *tecumseh* was described from the vicinity of Mt. Whitney in the Sierra Nevada of California and refers to the small *P. sabuleti* from the higher elevations of these mountains. *P. s. tecumseh* is the smallest of the *P. sabuleti* (male, LFW=10.8mm., [10.4-11.1mm.]; female, LFW=12.3mm., [11.2-13.2mm.], sample from Carson Range, Washoe Co., Nevada). Males are orange above with broad, blackish-brown and weakly serrated margins on both wings. The orange area of the secondaries is rather triangle-shaped. The ventral primaries are less dark orange becoming yellow-orange postmedially. The margins are as on the dorsum but lightly overscaled and appearing dark olive. The ventral secondaries are a similar dark olive color with a deep, nearly orangish, yellow postmedian band often extending basally as a patch as on nominate *P. sabuleti*. The veins are thinly lined with yellow. The blackish basal marks noted for *P. s. sabuleti* are present but not distinct against the darker ground color. The fringes are pale orange. The genitalia are of the typical *P. sabuleti* form but proportionately smaller in size and have a few scattered and distinctly contrasting blackish among the pale brownish "hairs" (Fig. 6).

Females are paler orange than males becoming yellow-orange postmedially on the primaries. The marginal bands are broad with little overscaling. The discal area of the primaries has the two wedge-shaped marks as on nominate *Polites sabuleti*. The orange of the secondaries varies from as on the male to a narrow postmedian band. The ventral primaries have an orangish cell and a pale yellow-orange postmedian. The margins are blackish-olive to yellow-olive (less overscaled than on the male), and the hindwing is a similar color. The yellow postmedian band is of moderate width and does not extend basally as it often does on males. The dark basal marks are as on nominate *P. sabuleti* but less contrasting. The fringes are pale gray to pale yellow on the secondaries and dark gray on the primaries.

*Polites sabuleti tecumseh* is nearly restricted to the Sierra Nevada. A short series (3 males, 1 female, AME) labeled Deep Creek, Sweetwater Mountains, Mono County,



California are also typical examples of this taxon. Other outlying populations heretofore referred to as or close to this taxon are different enough to recognize subspecifically and apparently represent convergence among the various higher elevation populations with different evolutionary histories. Such populations are known from such areas as the Trinity Alps-Mount Eddy area (Trinity County, California, Shapiro *et al.* 1979), White Mountains (Inyo County, California-Esmeralda County, Nevada, McGuire 1982, below), the Mt. Shasta area (Siskiyou County, California, USNM, AME, CM) and possibly the Crater Lake (Douglas County, Oregon, AMNH) and the Bryce Canyon (Garfield County, Utah, AME) areas. In Nevada, *P. s. tecumseh* occurs above about 6500 feet in middle elevation meadows of the Carson Range (Fig. 5). There is one brood from late June to mid August. The larval host plant is reported as *Agrostis scabra* (Gramineae) at Castle Peak in nearby California (Shapiro 1977).

Wright's (1905) *Pamphila chispa* also described from the Sierra Nevada has been treated as a straight synonym of *Polites sabuleti tecumseh*. This needs further study. The types of *P. s. chispa* as described and illustrated (Wright 1905) have a whitish postmedian band on the ventral hindwing whereas *P. s. tecumseh* is yellow banded. Various sampled populations seem to be one or the other. Known Nevada populations are strictly yellow banded.

At most locations, *Polites sabuleti tecumseh* is elevationally and ecologically disjunct from lowland populations (subspecies) of the species. Shapiro (1975) discussed possible genetic differences. There are, however, four male specimens (CM) from near Olancha, Inyo County, California that appear intermediate toward a low elevation phenotype. These are apparently from a population on the edge of the range of *P. s. tecumseh*. Further collecting along with precise locations and ecological notes along with an assessment of the white-banded *P. s. chispa* phenotype are needed to evaluate this situation properly.

A *Polites sabuleti*, superficially similar to the Sierra Nevada phenotype, and referred to that taxon (McGuire 1982), occurs in the White Mountains on the Nevada-California border. This is not *P. s. tecumseh* and the following name is proposed:

***Polites sabuleti albamontana*, new subspecies**

Fig. 3

MALE. Size medium (LFW=12.2mm. [11.0-12.9mm.]) for *Polites sabuleti*. Dorsal ground color a rather dull orange. Wing margins broad and weakly serrated, these and poststigmatal patch broad, blackish-brown lightly overscaled proximally with ground color. Secondaries with extensive blackish-brown costa, base and anal margin. Ventral primaries with ground color orange becoming yellow distally. Well-defined blackish margins, lightly overscaled with yellow imparting a dark olive appearance. Secondaries of the same olive color with broad, well-defined cobweb pattern of pale yellow. Postmedian band medium width. Fringes pale yellow-orange. Genitalia similar in form to nominate *P. sabuleti* (Fig. 6) but with mixture of whitish and black "hairs".

FEMALE. Size large (LFW=13.8mm., [12.8-14.8mm.]) for species. Ground color orange becoming paler yellow-orange distally, with well-defined, lightly overscaled dark brown margins on both wings. Brown of costal, basal and anal areas of secondaries broad, the orange areas limited to a broad postmedian band and a large midcell spot.

Ventral primaries with dull orange cell and broad overscaled blackish margins appearing slightly darker than on male. Secondaries of similar color with a distinct, broad cobweb pattern of creamy-white. Fringes pale gray on secondaries, gray on primaries.

TYPES. Holotype male — NEVADA: Esmeralda Co.; White Mts., Trail Canyon, 24 July 1980, leg. G. T. Austin. Allotype female — NEVADA: Esmeralda Co.; White Mts., high ridge above Trail Canyon, 10600-10800', 21 July 1981, leg. G. T. Austin. Paratypes (16 males, 30 females, all NEVADA: Esmeralda Co.; White Mts., Trail Canyon) 4 males, 4 females, same data as holotype; 6 males, 9 females, same location as holotype, 9600', 21 July 1981; 2 males, 1 female, 17 June 1983, leg. G. T. Austin; 4 males, 14 females, 5 August 1979, leg. G. T. Austin; 1 female, 28 July 1978, leg. G. T. Austin; 1 female, Boundary Peak, 13140', 21 July 1981, leg. G. T. Austin.

DEPOSITION OF TYPE MATERIAL. The holotype male, allotype female and 2 male and 4 female paratypes are deposited at the Nevada State Museum. One pair each of paratypes are to be deposited in the American Museum of Natural History, Allyn Museum of Entomology, Los Angeles County Museum and the National Museum of Natural History. The remaining paratypes are to be retained by the author.

TYPE LOCALITY. NEVADA: Esmeralda County, White Mountains, Trail Canyon, 9000', T1S, R33E, S9, 10, 17.

OTHER SPECIMENS EXAMINED. CALIFORNIA: Mono Co.; White Mts., Sheep Creek, 8 Sept. 1970, *leg.* P. Herlan (1 female), Sheep Mtn., 15 July 1979, *leg.* J. F. Emmel (2 males, 5 females). NEVADA: Esmeralda Co.; White Mts., Indian Creek, 7-9 mi. W. Nv. 264, 18 June 1983, *leg.* G. T. Austin (3 males, 1 female); White Mts., Chiatovitch Creek, 9-11 mi. W. Nv. 3A (=Nv. 264), 12 June 1978, *leg.* G. T. Austin (1 female).

OTHER KNOWN RECORDS. Mt. Barcroft, 13400', White Mountains, Mono Co., California, 29 July 1978 (McGuire 1982).

DISTRIBUTION AND PHENOLOGY. This phenotype is restricted to the White Mountains of Nevada and California above about 7500' in elevation (Fig. 5). It flies in wet areas along streams and occasionally on the high ridges. There is one brood with fresh material in mid-June which becomes progressively worn through the season, the latest record being in early September.

ETYMOLOGY. This taxon is named after the mountain range to which it appears endemic, the White Mountains on the California-Nevada border.

DIAGNOSIS AND DISCUSSION. Dorsally, both sexes of *Polites sabuleti albamontana* are very similar to *P. s. tecumseh* in color and pattern. The orange of male *P. s. albamontana* is slightly paler. Both sexes (but especially females) have more extensive basal black on the dorsal secondaries than *P. s. tecumseh*, and the female phenotype is more constant. Females of *P. s. tecumseh* vary considerably in the amount of orange on the dorsal surface of both wings. The ventral surface of *P. s. albamontana* is darker (considerably so on females) than *P. s. tecumseh*. On *P. s. albamontana* the postmedian band of males is pale yellow (not the deep, nearly orange-yellow of *P. s. tecumseh*); that of the females is whitish (rather than yellowish). Overall, the ventrum of *P. s. tecumseh* has a somewhat yellow aspect while that of *P. s. albamontana* has a darker and olive aspect. Above all, *P. s. albamontana* is the size of many of the lowland populations of the species whereas *P. s. tecumseh* is a diminutive insect. *P. s. albamontana* differs from *P. s. sabuleti*, *P. s. alkaliensis* and *P. s. genoa* by the broader dark margins of the male and the noticeably darker ground color beneath. The larval hostplant is reported as *Festuca brachyphylla* (Poaceae) in California (McGuire 1982).

At a lower elevation on the east slope of the White Mountains (Sand Springs, 5520', Esmeralda County, Nevada) is a population assigned to *Polites sabuleti sabuleti* and which shows no intermediacy towards *P. s. albamontana*. This location is about 10 km from a known location for *P. s. albamontana*.

In 1984, I discovered a distinct phenotype of *Polites sabuleti* in Humboldt County, Nevada. So unexpected was the phenotype that I considered the first specimen caught to be an aberration but a series dispelled that notion. This butterfly may be known as follows:

*Polites sabuleti sinemaculata*, new subspecies

Fig. 3

MALE. Size large (LFW=12.6mm., [11.9-13.4mm]) for *Polites sabuleti*. Dorsum bright golden-orange with a prominent black stigma on primaries of the form of all *P. sabuleti*. Poststigmatal patch grayish and typical for the species. Dark margin of primaries absent to faint, usually indicated only by a slightly darker yellow-orange color. Terminal line black, prominent. Fringes of same golden-yellow as wing. Secondaries with no outer marginal border, black along costal and anal margins narrow, base of wing usually dusted lightly with black. Terminal line and fringes as on primaries.

Ventral surface paler yellow-orange than dorsum. Black of primaries restricted to very

base of cell and narrowly along posterior margin, not extending as far distally as usual on other *Polites sabuleti*. Pattern typical of species but very faintly contrasting, indicated by slightly differing shades of yellow-orange. Secondaries with cobweb pattern also faintly indicated. Genitalia the most distinctive of those *P. sabuleti* examined in this study (Fig. 6). Basically, of typical *P. sabuleti* form but with a relatively longer and more curved saccus, valvae very heavily covered with whitish "hairs".

**FEMALE.** Size large (LFW=14.0mm., [13.1-15.0mm]) for *Polites sabuleti*. Dorsal wing color pale yellow-orange with typical *P. sabuleti* pattern present but washed out and less distinctly indicated: dark areas narrower, these heavily overscaled with ground color. Postmedial area of primaries whitish-yellow. Terminal line dark gray, fringes pale grayish on primaries, white on secondaries.

Ventral surface paler with pattern more distinctly indicated than on male. Postmedial pale areas of primaries and postmedian band and associated pattern of secondaries ghostly white.

**TYPES.** Holotype male — NEVADA: Humboldt Co.; Nv. 140, 5.0 mi. W. Denio Jct., 25 Aug. 1984, leg. G. T. Austin. Allotype female — same data as holotype. Paratypes (27 males, 14 females) — 22 males, 4 females, same data as holotype; 5 males, 10 females, same location as holotype, 15 Sept. 1985, leg. R. Albright.

**DEPOSITION OF TYPE MATERIAL.** The holotype, allotype and 5 male paratypes are deposited at the Nevada State Museum. One male paratype is to be deposited at each the American Museum of Natural History, Allyn Museum of Entomology, Los Angeles County Museum and Natural Museum of Natural History. Five male and 10 female paratypes are in the collection of R. Albright, Dayton, Oregon. The remaining paratypes are to be retained by the author.

**TYPE LOCALITY.** NEVADA: Humboldt County: Baltazor Hot Spring, Nevada State Route 140, 5.0 miles west of Denio Junction, 4213', T46N. R28E, S13 on USGS Denio, Nevada-Oregon, 15' quadrangle. The area is a salt flat adjacent to a hot spring covered with a rather dense growth of *Distichlis spicata* (L.) (Poaceae), which probably serves as the larval hostplant. Adults were nectaring on yellow and white composites (Asteraceae).

**DISTRIBUTION AND PHENOLOGY.** This distinctive phenotype is known to date only from the type locality (Fig. 5) where it has been taken in late August (very fresh) and mid September (somewhat worn). It is unknown if there are earlier broods.

**ETYMOLOGY.** The name refers to the almost complete absence of the typical pattern of *Polites sabuleti*.

**DIAGNOSIS AND DISCUSSION.** This is by far the most distinctive of the *Polites sabuleti* subspecies. The males all but lack the distinctive serrated marginal dark areas characteristic of all other known populations of the species. These dark areas are indicated as a shadow, slightly darker than ground color. Likewise, the ventral surface shows virtually none of the typical *P. sabuleti* pattern. Other dark markings are also less extensive than on other *P. sabuleti*. Females are readily recognizable as a *P. sabuleti* but they are distinctly paler, appearing bleached.

The Great Basin, and especially Nevada, is known for its pale phenotype of a wide variety of butterflies (Austin and Murphy 1987). For many years, the Reese River population of *Polites sabuleti* (see below) was considered the palest of the species. The discovery of *P. s. sinemaculata* has removed that distinction. While the dorsal orange color is deeper and brighter than on the Reese River butterfly, the overall aspect of *P. s. sinemaculata* is of a very pale butterfly because of the near lack of a dorsal pattern on males, restriction of such on females and the very pale ventral surface of both sexes. As far as is known at present, *P. s. sinemaculata* is restricted to the type locality. Geographically, the nearest population of *P. sabuleti* is in the Pine Forest Range (about 16 km SSE of the type locality). This and other nearby populations (Kings River Valley and Jackson Mountains, Humboldt County, Nevada; Granite Mountains, Washoe County, Nevada and known southern Oregon populations) do not even approach the phenotype of *P. s. sinemaculata* suggesting very effective isolation of this population. Other areas of the drainage system in which the type locality is located need to be investigated for possible other colonies. None of the species has been taken at the rather well collected Dufurrena Ranch, Humboldt County,



Nevada, about 30 km west of the type locality of *P. s. sinemaculata*.

For many years, a pallid phenotype of *Polites sabuleti* has been known from the Reese River Valley in central Nevada but it remains to be described. This is rectified here and the butterfly may be known as:

*Polites sabuleti pallida*, new subspecies

Fig. 3

MALE. Size medium (LFW=11.9mm., [11.1-12.4mm.]) for species. Dorsal surface ground color pale (whitish) orange (especially adjacent to marginal dark areas) with rather narrow, heavily overscaled (but distinct and deeply serrated) brownish-black margins on both wings. Poststigma patch small. Lateral and dark patch apical to stigma often obsolete due to heavy overscaling of ground color. Costa and basal area of secondaries of same color as margins and usually similarly heavily overscaled. Fringes broad, pale yellowish-orange.

Ground color of ventral surface yellowish overscaled somewhat with whitish. Marginal area of primaries and entire secondaries heavily overscaled giving these areas a yellow-olive aspect. Cobweb pattern on secondaries, a paler creamy-yellow, usually contrasting little with background, postmedian band relatively narrow. Genitalia similar to nominate *Polites sabuleti* (Fig. 6), rather heavily covered with whitish or pale brownish "hairs".

FEMALE. Size large (LFW=14.1mm., [13.0-15.2mm.]) for *Polites sabuleti*. Dorsal surface ground color paler than on male, postmedian area of both wings and subapical spots of primaries pale cream color. Dark areas overscaled but less than on male. Margins medium width and deeply serrated. Fringes broad, whitish on secondaries, pale gray on primaries.

Ground color of ventral primaries yellowish-orange, overscaled heavily with whitish; postmedian area pale creamy-white, broad and distinct. Margin blackish, overscaled with white, especially heavily distally. Secondaries rather dark yellowish-gray, overscaled with whitish. Cobweb pattern including postmedian band nearly white, often weakly contrasting.

TYPES. Holotype male — NEVADA: Lander Co.: Reese River Valley, Nv. 722, 4.0 mi. E. of Reese River, 22 Aug. 1981, leg. G. T. Austin. Allotype female — same data as holotype. Paratypes (171 males, 91 females, all NEVADA: Lander Co.; Reese River Valley) — 31 males, 21 females, same data as holotype; 1 male, same location as holotype, 11 July 1978, leg. G. T. Austin; 1 male, same location as holotype, 18 July 1980, leg. G. T. Austin; 27 males, 18 females, same location as holotype, 28 Aug. 1984, leg. G. T. Austin; 53 males, 1 female, Nv. 2 (= Nv. 722) at Reese River, 14 Aug. 1978, leg. G. T. Austin; 1 male, same location, 5 July 1978, leg. G. T. Austin; 3 males, 2 females, same location, 3 June 1984, leg. G. T. Austin; 1 male, Nv. 2 (= Nv. 722), Reese River to 0.5 mi. E., 11 July 1978, leg. G. T. Austin; 4 males, 6 females, same location, 8 July 1979, leg. G. T. Austin; 1 male, same location, 10 July 1980, leg. G. T. Austin; 1 male, same location, 16 July 1983, leg. G. T. Austin; 34 males, 15 females, U. S. 50 at Reese River, 22 Aug. 1981, leg. G. T. Austin; 13 males, 22 females, U. S. 50, 2.5 mi. E. Reese River, 26 Aug. 1984, leg. G. T. Austin; 5 females, Reese River, 2 Aug. 1968, leg. P. J. Herlan; 1 female, same location, 1 Aug. 1970, leg. C. Callaghan.

DEPOSITION OF TYPE MATERIAL. The holotype, allotype and 40 male and 17 female paratypes are deposited at the Nevada State Museum. Three pair each of paratypes are to be deposited at the American Museum of Natural History, Allyn Museum of Entomology, Los Angeles County Museum and National Museum of Natural History. The remaining paratypes are to be retained by the author.

TYPE LOCALITY. NEVADA: Lander County; Reese River Valley, Nevada State Route 722 (formerly Nevada State Route 2), 4.0 miles (north) east of Reese River, 5720', T19N, R43E, S32 on USGS Austin, Nevada, 15' quadrangle. This is an expansive alkaline flat dominated by *Distichlis*. Adults nectar on a variety of composites (Asteraceae). Oviposition was recorded on *Distichlis spicata* (L.) (Poaceae) at this locality.

OTHER SPECIMENS EXAMINED. NEVADA: Lander Co.; Reese River Valley, Nv.

305, 19.0 mi. N. U. S. 50, 26 Aug. 1984, *leg.* G. T. Austin (11 males, 4 females). NEVADA: Nye Co.; Big Smoky Valley, Triple T Ranch, 12 Sept. 1983, *leg.* G. T. Austin (30 males, 56 females); same location, 29 Aug. 1984, *leg.* G. T. Austin (24 males, 26 females); Big Smoky Valley, Northumberland Mine Rd., 1.5 mi. E. Nv. 376, 29 Aug. 1984, *leg.* G. T. Austin (3 males, 3 females); Monitor Valley, Potts, 10 Aug. 1983, *leg.* G. T. Austin (84 males, 15 females); same location, 9 July 1984, *leg.* G. T. Austin (2 males, 1 female); Railroad Valley, Lockes, 10 Sept. 1983, *leg.* G. T. Austin (40 males, 7 females); same location, 10 July 1984, *leg.* G. T. Austin (1 female); Railroad Valley, Nyala Road, 11.9 mi. S. jct. Current Rd., 10 Sept. 1983, *leg.* G. T. Austin (43 males, 3 females); Duckwater, 10 Sept. 1983, *leg.* G. T. Austin (6 males, 8 females).

OTHER RECORDS. NEVADA: Lander Co.; Reese River Valley, 23 June 1970, 6 July 1972 (DB); Reese River, 4 July 1974 (DB); Nv. 2 at Reese River, 6 Aug. 1967, 12 July 1969 (JFE, OS); 4 mi. NE Reese River on Nv. 2, 12 July 1969 (JFE, OS); west of Austin, 25 July 1973 (JWT), Reese River Valley, 10 mi. W. Austin, 5 Aug. 1977, 27 Aug. 1978, 17 Sept. 1977 (DS); Reese River crossing, Hwy. 2, 6 Aug. 1974 (JS), 4 July 1974 (OS). NEVADA: Nye Co.; Potts, 23 Aug. 1981 (OS).

DISTRIBUTION AND PHENOLOGY. The *Polites sabuleti pallida* phenotype is distributed as isolated colonies on alkaline saltgrass flats in at least parts of four valley systems of central Nevada (Reese River, Big Smoky, Monitor, and Railroad valleys, Fig. 5) and is often abundant where found. There are probably two broods from early June to mid September with peak numbers in late August.

ETYMOLOGY. The name of this taxon refers to its very pale orange dorsal aspect.

DIAGNOSIS AND DISCUSSION. *Polites sabuleti pallida* is immediately recognized by the pallid orange (appearing faded) dorsum; the general aspect of the females is nearly whitish. Nominate *P. sabuleti* and *P. s. genoa* are brighter orange and the females have no or less extensive (and noticable) white. The marginal areas of the wings of males are much more heavily overscaled with pale orange on *P. s. pallida* than on either of these other two taxa, and the fringes are broader and more distinct. Ventrally, *P. s. pallida* resembles *P. s. genoa* but is paler; the postmedian pattern of the primaries tends to be somewhat broader and more distinct (especially on females) and the postmedian band on the secondaries of females is nearly white (versus creamy on *P. s. genoa* and yellow on *P. s. sabuleti*). Males also resemble *P. s. alkaliensis* on the ventral surface but are even paler yellow and with less contrast. Female *P. s. pallida* are much grayer beneath than *P. s. alkaliensis*. The fringes of *P. s. pallida* are broader and more distinct than on any other *P. sabuleti* except the next.

This is another of the pale Great Basin butterflies, its pallidness reflected in another direction from that shown by *Polites sabuleti sinemaculata* (see above) being manifested in a pallid ground color rather than by a reduction of the dark markings. Another pallid endemic butterfly, *Cercyonis oetus pallescens* T. & J. Emmel, was described from the same type locality as *P. s. pallida* and occurs with it also in the Big Smoky Valley. Also occurring here is a pale *Hesperia uncas* W. H. Edwards allied to *H. u. lasus* (W. H. Edwards) which superficially resembles *P. s. pallida* (in fact, I have found female specimens of *P. s. pallida* mixed in series of this *H. uncas*).

In the southern Reese River Valley, just across the Nye County line (less than 45 km south of the type locality of *Polites sabuleti pallida*), the *P. sabuleti* approach the phenotype of *P. s. sabuleti*. Little or no suitable habitat exists for the species in the intervening area suggesting effective isolation. This same location also produces a phenotype of *Cercyonis oetus*, which is like nominate *C. oetus* rather than *C. o. pallescens*.

Still another unnamed phenotype of *Polites sabuleti* occurs in the eastern valleys of Nevada. This is a very dark butterfly which I name:

*Polites sabuleti nigrescens*, new subspecies

Fig. 3

MALE. Size medium (LFW=12.3mm., [11.6-13.2mm.]) for species. Primaries short, broad with apex rather rounded. Ground color of dorsal surface pale orange with very broad,

moderately serrated, brownish-black margins to both wings with moderate overscaling. Poststigmatal patch and dark patch apical to stigma broad and distinct. Base of secondaries broadly blackish-brown, often reducing orange on this wing to postmedian band only.

Ventral ground color orange-yellow; marginal band of primaries broad, usually extending to posterior margin and somewhat overscaled, this area with a dark olive appearance. Secondaries heavily overscaled with blackish giving a rather dark yellow-olive aspect; cobweb pattern distinct and very pale yellowish, postmedian band rather narrow. Fringes broad, pale yellow-orange. Genitalia rather distinctive, with valvae somewhat constricted in middle, these heavily covered with whitish "hairs" (Fig. 6).

**FEMALE.** Size large (LFW=14.0mm., [13.2-14.8mm.]) for species. Primaries short and broad as on male. Dorsum largely black with distinct (but narrow) pale orange to whitish postmedian — and usually with some pale orange in cell of primaries and a pale orange, sharply defined postmedian and a vague midcell spots on secondaries. On some specimens, pattern of secondaries reduced to 3 or 4 vague postmedian spots.

Ventral ground color dull orangish, primaries with cell lightly overscaled with blackish, an extensive black basal patch posteriorly, a narrow postmedian band and a blackish margin overscaled with whitish (especially distally). Secondaries blackish-olive overscaled with whitish. Cobweb pattern narrow, white and distinct. Fringes broad, white on secondaries, pale gray on primaries.

**TYPES.** Holotype male — NEVADA: White Pine Co.; Steptoe Valley, Warm Springs, 17 Aug. 1981, *leg.* G. T. Austin. Allotype female — same data as holotype. Paratypes (122 males, 69 females, all NEVADA: White Pine Co.; Steptoe Valley) — 91 males, 26 females, same data as holotype; 25 males, 40 females, same location, 5 Sept. 1983, *leg.* G. T. Austin; 6 males, 3 females, 2.5 mi. NW McGill, 5 Sept. 1983, *leg.* G. T. Austin.

**DEPOSITION OF TYPE MATERIAL.** The holotype, allotype and 49 male and 23 female paratypes are deposited at the Nevada State Museum. Two pairs each of paratypes are to be deposited at the American Museum of Natural History, Allyn Museum of Entomology, Los Angeles County Museum and National Museum of Natural History. The remaining paratypes are to be retained by the author.

**TYPE LOCALITY.** NEVADA: White Pine County, Steptoe Valley, Warm Springs, 5900', T21N, R63E, S25 on the USGS Monte Neva Hot Springs, Nevada, 7.5' quadrangle. This is a flat valley bottom, often rather wet and dominated by *Distichlis* (Poaceae). Adults nectar readily on yellow composites (Asteraceae).

**OTHER SPECIMENS EXAMINED.** NEVADA: Elko Co.; rd. to Cherry Creek, 2.5 mi. S. Currie, 27 July 1983, *leg.* G. T. Austin (2 males); same location, 5 Sept. 1983, *leg.* G. T. Austin (7 males, 19 females); Ruby Marshes, Ruby Valley Rd., 2.5 mi. N. NWR headquarters, 14 Aug. 1981, *leg.* G. T. Austin (6 males, 3 females); Ruby Valley, 3.2 mi. N. Ruby L. NWR headquarters, 25 June 1981, *leg.* G. T. Austin (1 male); Ruby Mts., Nv. 229, 0.2 mi. S. Secret Pass, 15 Aug. 1981, *leg.* G. T. Austin (40 males, 19 females); Thousand Springs Creek, Winecup Ranch, 4.0 mi. E. U.S. 93, 27 Aug. 1984, *leg.* G. T. Austin (11 males, 8 females); Thousand Springs Creek, 6.5 mi. E. U.S. 93, 7 Sept. 1983, *leg.* G. T. Austin (1 male, 5 females); Thousand Springs Creek, 4.2 mi. E. U.S. 93, 7 Sept. 1983, *leg.* G. T. Austin (1 male, 2 female). NEVADA: Eureka Co.; U.S. 50, 7.5 mi. W. Nv. 278, 28 Aug. 1984, *leg.* G. T. Austin (5 males, 5 females); same location, 8 Sept. 1983, *leg.* G. T. Austin (1 female); U.S. 50, 13.0 mi. E. Lander Co. line, 28 Aug. 1984, *leg.* G. T. Austin (7 males, 18 females). NEVADA: Lincoln Co.; Lake Valley, U.S. 93, Geyers Ranch, 4 Sept. 1983, *leg.* G. T. Austin (26 males, 2 females); same location, 22 Aug. 1984, *leg.* G. T. Austin (6 males). NEVADA: Nye Co.; White River Valley, Sunnyside, 12 Aug. 1983, *leg.* G. T. Austin (1 male, 2 females); same location, 15 July 1984, *leg.* G. T. Austin (5 males, 9 females). NEVADA: White Pine Co.; Spring Valley, Minerva, 4 Sept. 1983, *leg.* G. T. Austin (4 males, 6 female); Spring Valley, Shoshone Ponds, 4 Sept. 1983, *leg.* G. T. Austin (2 males, 2 females); Ruby Marshes, Ruby Valley Rd., 3.8 mi. S. Elko Co. line, 14 Aug. 1981, *leg.* G. T. Austin (13 males, 17 females); Ruby Marshes, Ruby Valley Rd., 0.8 mi. S. Elko Co. line, 14 Aug. 1981, *leg.* G. T. Austin (16 males, 13 females); Ruby Marshes, Ruby Valley Rd. 2.7 mi. S. Elko Co. line, 14 Aug. 1981, *leg.* G. T. Austin (1 female); Newark Valley, Nv. 892, 20 mi. N. U. S. 50, 20 Aug. 1981, *leg.* G. T. Austin (2

males); Newark Valley, Nv. 892, 30.9 mi. N. U. S. 50, 20 Aug. 1981, leg. G. T. Austin (4 males, 1 female).

OTHER RECORDS. NEVADA: White Pine Co.; Ruby Lakes near Shantytown, 7 Aug. 1978 (JWT); Ruby Lake, 28 Aug. 1978 (DS).

DISTRIBUTION AND PHENOLOGY. At present, *Polites sabuleti nigrescens* is known only from the eastern part of Nevada (Fig. 5). It extends westward into western Eureka County north of populations of *P. s. pallida* and south of the *P. s. sabuleti*-like phenotype in the Humboldt River valley from extreme east central Elko County (Thousand Springs Creek) to northern Lincoln County (Lake Valley) and northeastern Nye County. It flies mostly in lowland wet areas near springs. These localities are usually noticeably more lush and less alkaline than the habitat of *P. s. pallida*. There is one large brood peaking in mid August with records from late June through early September suggesting a small early brood.

ETYMOLOGY. *Polites sabuleti nigrescens* is named after its distinctly black aspect, the darkest of all known phenotypes of the species.

DIAGNOSIS AND DISCUSSION. *Polites sabuleti nigrescens* is a very dark *P. sabuleti* with noticeably short and rounded primaries. The dorsal orange of the male is a shade darker than on *P. s. pallida* and appears to have a grayish cast, a distinctive aspect not seen on any other *P. sabuleti* examined. The dorsal pale areas of both sexes, but especially of the female, are subordinate to the blackish areas. The marginal dark areas of the primaries on the male are much more extensive than on any other *P. sabuleti* phenotype. Similarly, the dark areas of the secondaries largely cover the wing and thus there is little basal extension of orange. Females are very dark with almost no orange in the cell of the primaries and the dorsal pattern of the secondaries is reduced to a postmedian band. Ventrally, this phenotype is similar to *P. s. pallida* but is much darker with more extensive dark areas leading to reduced postmedian markings and a higher contrast. Males of *P. s. pallida* appear pale and yellow ventrally; males of *P. s. nigrescens* appear dark and olive. Specimens from the type locality exhibit the extreme in darkness for the subspecies. Material from peripheral populations, while noticeably blacker than any other *P. sabuleti*, tends to be paler than topotypes, with an increased amount of orange above, especially on females.

At Sunnyside, the phenotype is closest to *Polites sabuleti nigrescens* but shows a slight tendency towards *P. s. pallida* characteristics. The Railroad Valley and Duckwater populations of *P. s. pallida* show a slight tendency towards *P. s. nigrescens*. A population of *P. sabuleti* with a phenotype similar to the nominate subspecies (see above) occurs in the midst of this area of intergradation at 2.0 miles east of Currant, Nye County. This is less than 25 km east of a *P. s. pallida* population in Railroad Valley and at a slightly higher elevation. I have only a series of males from here as yet but they show no intergradation towards *P. s. pallida* or *P. s. nigrescens*.

Oviposition was recorded to be on *Distichlis spicata* (L.) (Poaceae) in Eureka County and on *Agropyron dasystachyum* (Hook.) Vasey (Poaceae) in Nye County.

***Polites sabuleti chusca* (W. H. Edwards)**  
(Fig. 2)

Edwards (1873) described *Hesperia chusca* from a male taken by the Wheeler Expedition in Arizona. Brown and Miller (1980) reasonably restricted the type locality to Mohave County, Arizona, probably in the vicinity of Truxton Springs. It is a seasonally variable taxon. The following is based on Clark County, Nevada material. Males are medium-sized (LFW=12.3mm., [11.8-13.0mm]) *Polites sabuleti*. The dorsum is more yellow-orange than the orange of the nominate subspecies. The distinct, dark brown margins are narrower and more deeply serrated than on *P. s. sabuleti*. Similarly, the amount of basal, costal and anal black on the secondaries is reduced. The brown of the outer margins is very narrow on many mid summer (and occasionally fall) specimens. Ventrally, the primaries are yellow-orange (deepest in the cell). Most specimens have heavily overscaled dark margins which appear faint and yellow-olive. These may be considerably darker on some

fall and spring specimens. The ventral hindwing varies from olive-brown (occasional fall specimens) to nearly completely yellow (especially in mid summer). The cobweb pattern is of a broad postmedian band, basal blotches and veins, all yellow. On mid summer specimens, this is lost in the ground color and barely discernable. The dark basal marks are present but are usually faint. The fringes are pale yellow-orange. The genitalia are similar to those of nominate *P. sabuleti* (Fig. 6).

Females are large (LFW = 14.0 mm., [13.2-14.9 mm.]) and similar in dorsal color to males. The amount of black is similarly reduced in extent and the margins are deeply serrated. Mid summer specimens have narrow to nearly obsolete margins and the wedge-shaped discal marks are likewise nearly obsolete. The ventral surface is similar to that of the male but slightly more contrasting, especially in the fall. The fringes are pale gray on the secondaries and slightly darker on the primaries.

The original description of *Polites sabuleti chusca* called for a pale ("yellow fulvous") insect with "narrow fuscous serrated border" and with the ventral "secondaries rather ochraceous, immaculate". The holotype male is indeed the summer (long-day?) form with no discernable ventral pattern on the secondaries. *Polites sabuleti comstocki* described from southern California (Gunder 1925) is synonymous. The types were taken in early October. The male [holo]type is relatively unmarked beneath; the female [allo]type has the typical fall pattern described above. Nevada specimens are from the Colorado River drainage (Moapa, Las Vegas and Virgin valleys) in Clark County and probably samples small) from Pahrangat and Spring valleys in Lincoln County. Material from Pahrump Valley in Nye County is also *P. s. chusca* (Fig. 5). Clark County populations are at least three-brooded with records from April to early November. It occurs in lowland habitats, especially agricultural areas, where adults nectar commonly on *Medicago* (Fabaceae) and various composites (Asteraceae).

*Polites sabuleti chusca* is nearly restricted to the Colorado River drainage from southwestern Utah, western Arizona, southern Nevada and southeastern California.

## DISCUSSION

The complexity of *Polites sabuleti* is just beginning to be appreciated, and the data presented herein give such an indication based on extensive material from Nevada alone. The species is obviously phenotypically plastic, responding, apparently, to various environmental selective factors rather rapidly. Present day habitats did not begin appearing in the Great Basin until some 12000 years before present (Wells 1983), and the isolation of the various lowland (and montane) wet areas is even more recent. These factors have been correlated with fish distributions (e. g., Hubbs and Miller 1948, Hubbs *et al* 1974) but await more baseline data and subsequent interpretation among the butterflies. It seems probable from what is now known that there was more than one invasion of the Great Basin by several species of butterflies and from different sources (e. g., Grey and Moeck 1962, Austin 1983). This may explain, for example, the seemingly anomalous pockets of *P. s. sabuleti*-like phenotypes within the distributions of other phenotypes of the species.

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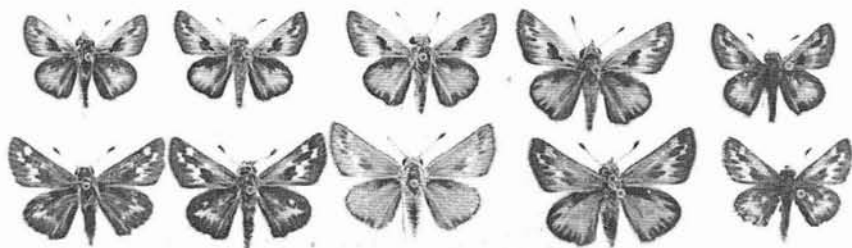


Figure 1a. *Polites sabuleti sabuleti* (dorsal surface, all leg. G. T. Austin). Left row, top — male, CA: Plumas Co.; Greenhorn Creek, Ca. 70, E of Quincy, 30 June 1985; second — female, same data; third — NV: Nye Co.; Hot Creek Range, Hot Creek, 11 Sept. 1983; bottom — female, same data. Second row, top — male. NV: Churchill Co.; Stillwater National Wildlife Refuge, Loop Road, 28 Aug. 1981; second — female, same location, 11 June 1982; third — male, NE Elko Co.; Elko, 12th Street at Humboldt River, 8 July 1980; bottom, female, same location, 4 Aug. 1980. Third row, top — male NV: Nye Co.; U.S. 95, 0.5 mi. S Springdale, 8 Sept. 1981; second — female, same location, 17 Sept. 1983; third — male, NV: Humboldt Co.; Kings River Valley, 11.5 mi. N. Kings River, 24 Aug. 1984; bottom — female, NV: Humboldt Co.; Quinn River Valley, 2.4 mi. S. McDermitt, 24 Aug. 1984. Right row, top — male, NV: Esmeralda Co.; E. base White Mts., Sand Spring, 24 Aug. 1983; second — female, same data; third — male, NV: Eureka/Lander Co. line; Beowawe Geysers, 26 Aug. 1984; bottom — female, same data.



Figure 1b. Same specimens as Fig. 1a (ventral surface).

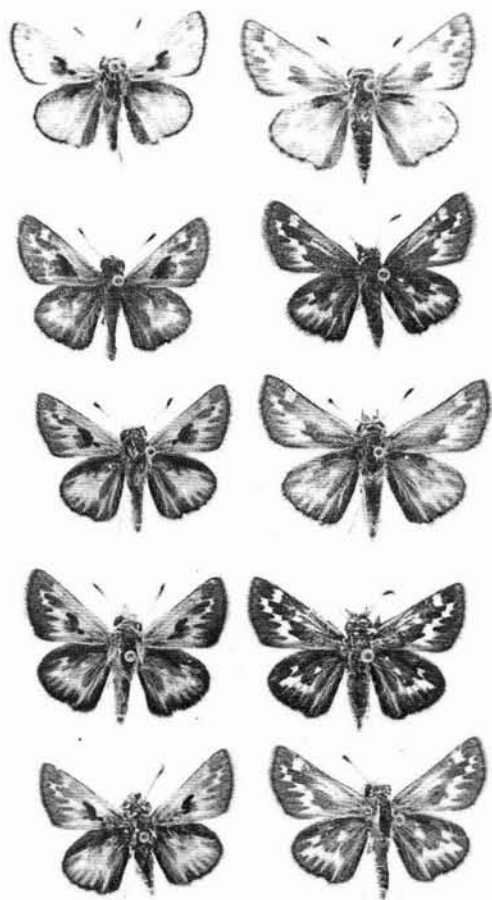


Figure 2a. *Polites sabuleti* subspecies (dorsal surface, all leg. G. T. Austin). Left row, top — *P. s. genoa*, male, NV: Douglas Co.; Carson Valley, Nv. 205, 0.5 mi. W Nv. 88, 1 Sept. 1981; bottom — *P. s. genoa*, female, NV: Douglas Co.; Carson Valley, Scossa Ranch, 23 Aug. 1981. Second row, top — *P. s. genoa* male, same data as top left; bottom — *P. s. genoa* female, same data as bottom left. Third row, top — *P. s. chusca* male (summer phenotype), NV: Clark Co.; Las Vegas Valley, Mormon Farm, 4 July 1984; bottom — *P. s. chusca* female (summer phenotype), same data. Fourth row, top — *P. s. chusca* male (fall phenotype), same location, 9 Sept. 1981; bottom — *P. s. chusca* female (fall phenotype), same location, 21 Sept. 1985. Right row, top — *P. s. tecumseh* male, NV: Washoe Co.; Nv. 431, 2.4 mi. W. Mt. Rose Summit, 25 July 1980; bottom — *P. s. tecumseh* female, same location, 21 July 1980.

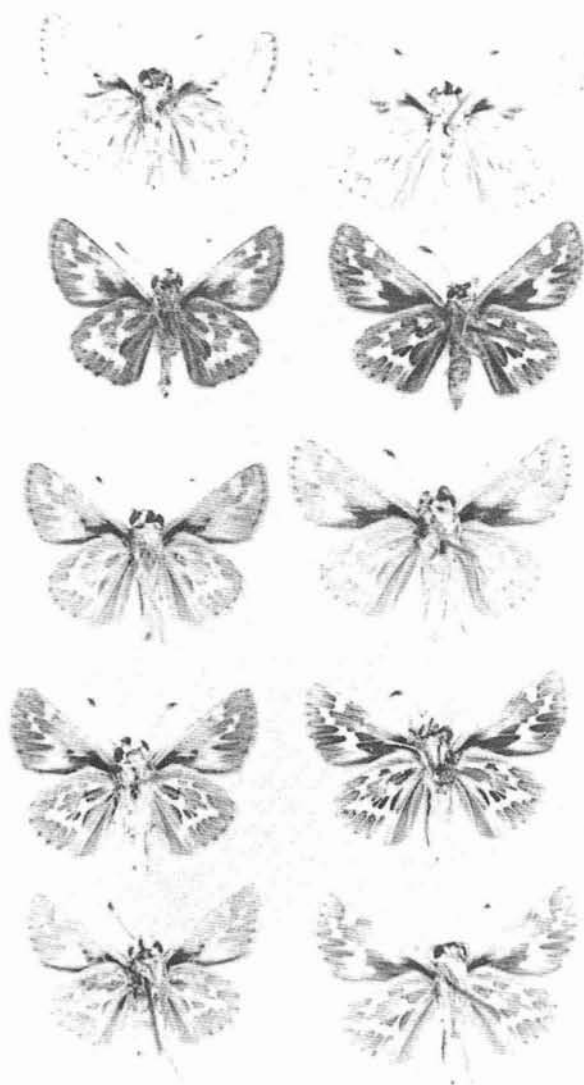


Figure 2b. *Polites sabuleti* subspecies (same specimens as Fig. 2a., ventral surface).

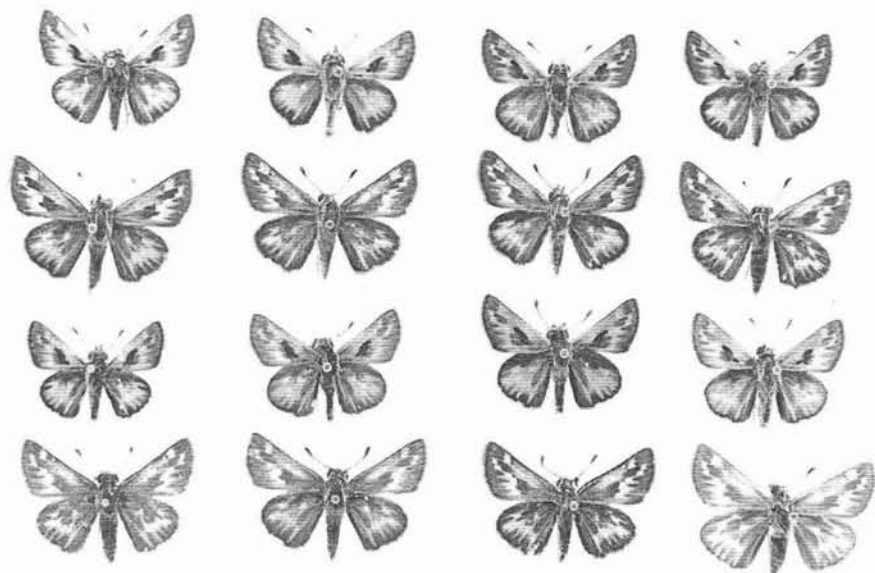


Figure 3a. *Polites sabuleti* subspecies (dorsal surface, all leg. G. T. Austin). Top left — *P. s. sinemaculata* holotype male, NV: Humboldt Co.; Nv. 140, 6.0 mi. W Denio Junction, 25 Aug. 1984; top right — *P. s. sinemaculata* allotype female, same data. Second left — *P. s. albamontana* holotype male, NV: Esmeralda Co.; White Mts., Trail Canyon, 8600', 24 July 1980; second right — *P. s. albamontana* allotype female, NV: Esmeralda Co.; White Mts., high ridge above Trail Canyon, 11,600-11,800', 21 July 1981. Third left — *P. s. alkaliensis* holotype male, NV: Washoe Co.; Granite Mts., Nv. 8A, 1.3 mi. W. Nv. 34, 8 Aug. 1981; third right — *P. s. alkaliensis* allotype female, same data. Fourth left — *P. s. nigrescens* holotype male, NV: White Pine Co.; Steptoe Valley, Warm Springs, 17 Aug. 1981; fourth right — *P. s. nigrescens* allotype female, same data. Bottom left — *P. s. pallida* holotype male, NV: Lander Co.; Reese River Valley, Nv. 722, 4.0 mi. E Reese River, 22 Aug. 1981; bottom right — *P. s. pallida* allotype female, same data.



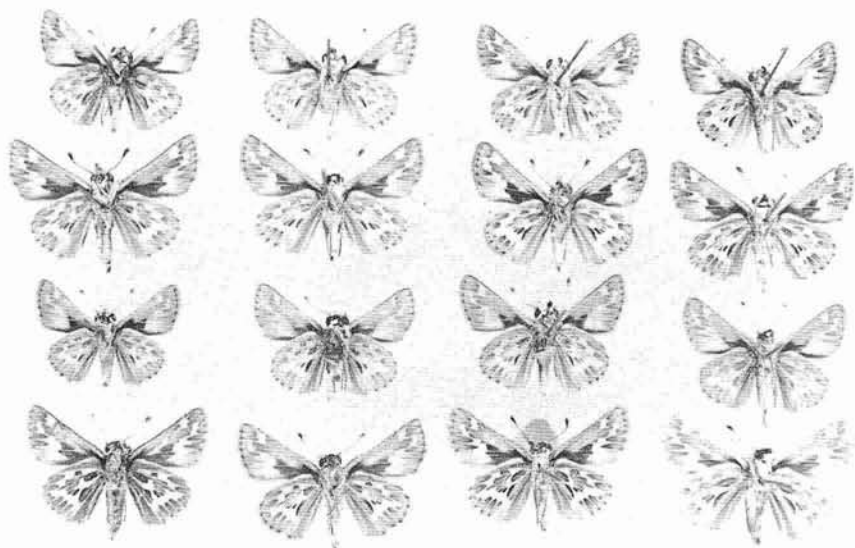


Figure 3b. *Polites sabuleti* subspecies (same species as in Fig. 3a, ventral surface).

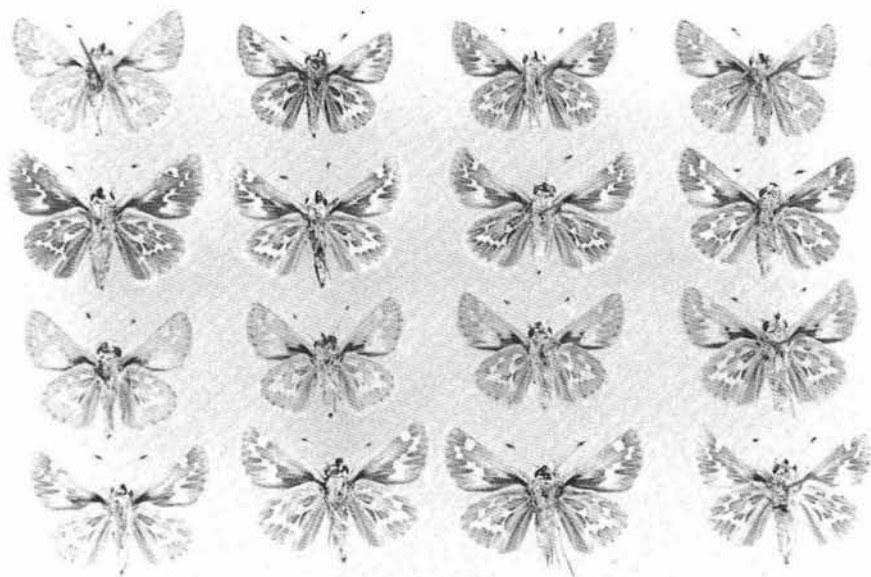


Figure 4a. *Polites sabuleti* subspecies (dorsal surface, all leg. G. T. Austin). *P. s. nigrescens*: left row, top — paratype male, NV: White Pine Co.; Steptoe Valley, Warm Springs, 17 Aug. 1981; left row, second — paratype female, same location, 5 Sept. 1983; second row, top — male, NV: Eureka Co.; U.S. 50, 13.0 mi. E Lander Co. line, 28 Aug. 1984; second row, second — female, same data; third row, top — male, NV: Elko Co.; Ruby Mts., 0.2 mi. S Secret Pass, 15 Aug. 1981; third row, second — female, same data; right row, top — male, NV: Lincoln Co.; Lake Valley, U.S. 93, Geysers Ranch, 4 Sept. 1983; right row, second — female, same data. *P. s. nigrescens*: left row, third — paratype male, NV: Lander Co.; Reese River Valley, U.S. 50 at Reese River, 22 Aug. 1981; left row, bottom — paratype female, NV: Lander Co.; Reese River Valley, Nv. 722, 4.0 mi. E Reese River, 22 Aug. 1981; second row, third — male, NV: Nye Co.; Big Smoky Valley, Triple T Ranch, 29 Aug. 1984; second row, bottom — female, same data; third row, third — male, NV: Nye Co.; Monitor Valley, Potts, 10 Aug. 1983; third row, bottom — female, same data; right row, third — male, NV: Nye Co.; Railroad Valley, Lockes, 10 Sept. 1983; right row, bottom — female, same data.

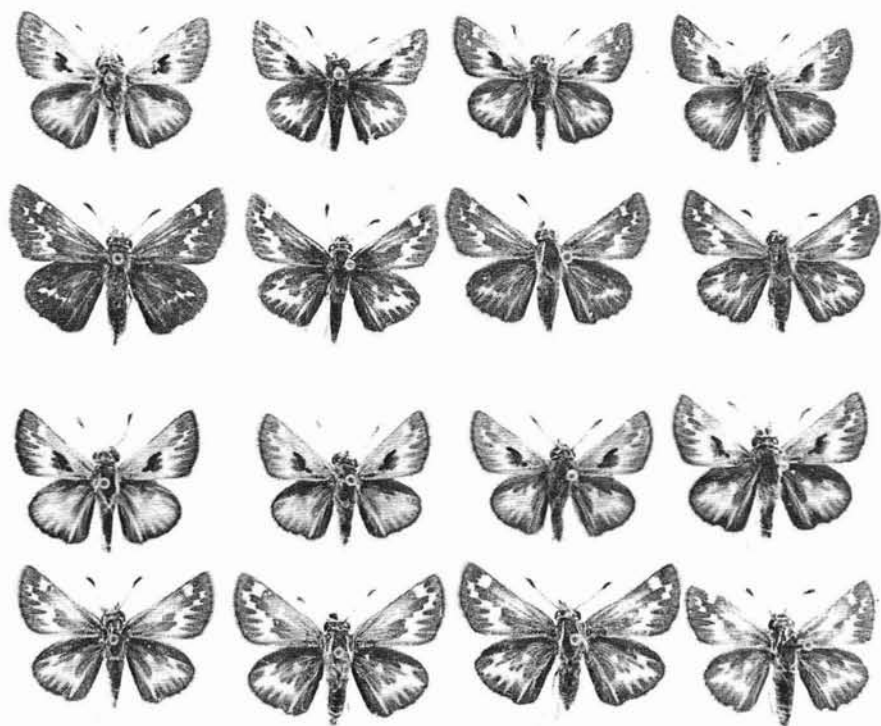


Figure 4b. *Polites sabuleti* subspecies (same specimens as in Fig. 4a. ventral surface).

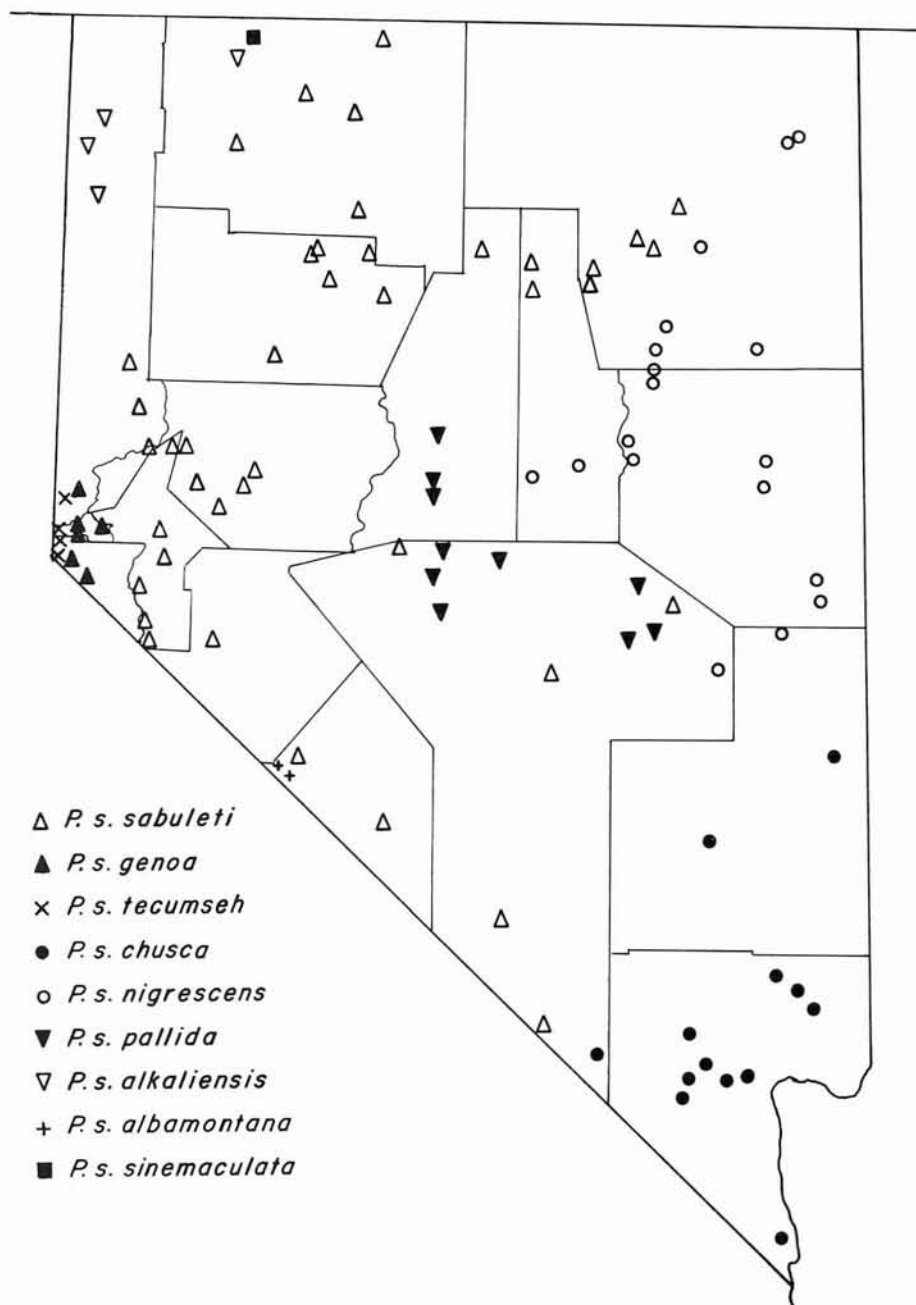


Figure 5. Distribution of *Polites sabuleti* in Nevada.

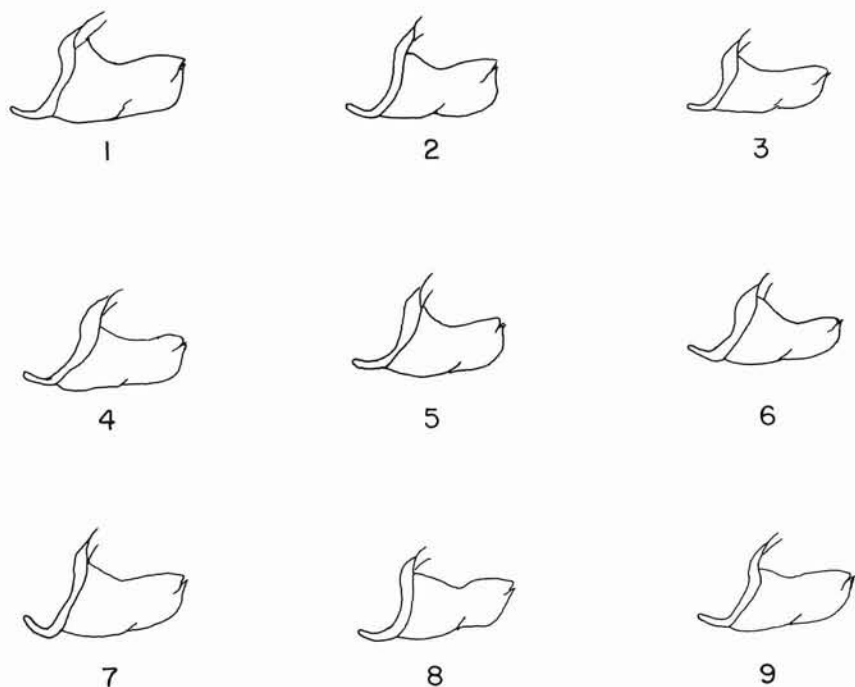


Figure 6. Genitalia of male *Polites sabuleti* (outer view of right valve and lower portion of vinculum including saccus). 1. *P. s. sabuleti* — CA: Plumas Co. 2. *P. s. chusca* — NV: Clark Co. 3. *P. s. tecumseh* — NV: Washoe Co. 4. *P. s. genoa* — NV: Douglas Co. (topotype) 5. *P. s. pallida* — NV: Lander Co. (paratype) 6. *P. s. albamontana* — NV: Esmeralda Co. (paratype) 7. *P. s. sinemaculata* — NV: Humboldt Co. (paratype) 8. *P. s. nigrescens* — NV: White Pine Co. (paratype) 9. *P. s. alkaliensis* — NV: Washoe Co. (paratype)



TABLE 1. Comparisons of *Polites sabuleti* subspecies in Nevada

TAXON	SIZE	DORSAL				VENTRAL			
		GROUND COLOR	MARGINS			OVERALL COLOR	CONTRAST	SECONDARY POSTMEDIAN	
			WIDTH	SERRATION	OVERSCALING			COLOR	WIDTH
MALES									
<i>sabuleti</i>	medium	orange	medium	medium	light	orangish	moderate	yellow	medium to broad
<i>genoa</i>	small	pale orange	medium	medium	heavy	yellowish	moderate	pale yellow	medium
<i>alkaliensis</i>	medium	pale orange	medium	strong	heavy	yellowish	weak	pale yellow	narrow to medium
<i>tecumseh</i>	very small	deep orange	broad	weak	light	olivish	strong	yellow	medium to broad
<i>albamontana</i>	medium	deep orange	broad	weak	light	olivish	strong	pale yellow	medium
<i>sinemaculata</i>	large	golden-orange	absent to narrow	strong	very heavy	yellow	very weak	pale yellow	medium
<i>pallida</i>	medium	whitish-orange	narrow	strong	heavy	yellowish	weak	pale yellow	narrow to medium
<i>nigrescens</i>	medium	pale orange	very broad	medium	medium	olivish	strong	whitish	narrow to medium
<i>chusca</i>	medium	orange	narrow to medium	strong	medium	yellowish to olivish	none to moderate	yellow	medium to broad
FEMALES									
<i>sabuleti</i>	large	orange	medium	medium	light	olivish	moderate	pale yellow	broad
<i>genoa</i>	medium	pale-orange to whitish	broad	medium	light	olivish	moderate	whitish	narrow
<i>alkaliensis</i>	medium	orange to pale orange	medium	medium to strong	medium	olivish-yellow	weak to moderate	pale yellow to whitish	narrow
<i>tecumseh</i>	very small	orange	broad	weak to medium	light	olivish	strong	pale yellow	narrow to medium
<i>albamontana</i>	large	orange to pale orange	medium	medium	light	dark olivish	strong	whitish	medium
<i>sinemaculata</i>	large	pale orange to whitish	narrow to medium	strong	heavy	pale olivish	weak to moderate	whitish	broad
<i>pallida</i>	large	pale orange to whitish	medium	strong	medium	gray	weak to moderate	white	medium to broad
<i>nigrescens</i>	large	pale orange to whitish	very broad	weak	weak to medium	dark gray	moderate to strong	white	narrow to medium
<i>chusca</i>	large	orange	narrow to medium	medium to strong	light	yellow-orange	weak to moderate	yellow	broad

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