Northern Paiute is a member of the Numic branch of the Uto-Aztecan language family. It is spoken across the Great Basin in the western United States—from Mono Lake in California, on the eastern slopes of the Sierra Nevada, through western Nevada and into southeastern Oregon and southwestern Idaho. There are, according to Golla (to appear), about 300 first-language speakers of Northern Paiute. In this illustration, we describe the language’s Mono Lake variety.

While some aspects of northern varieties of Northern Paiute have been described—e.g. phonetics (Waterman 1911, Haynes 2010), lexicon (Fowler, to appear), grammar (Liljeblad 1966, Snapp et al. 1982, Thornes 2003)—previous documentation of Mono Lake Northern Paiute is limited to a few word lists collected in the first part of the 20th century (Lamb n.d., Merriam 1900-1938, 1903-1938) and our own fieldnotes and recordings. The dialect spoken at Mono Lake and immediately to the north (in present-day Bridgeport and Coleville, California and Sweetwater, Nevada) diverges from more northerly ones in important ways. It preserves a number of typologically interesting phonological contrasts, and its morphology and lexicon differ significantly (Babel et al., to appear). The Mono Lake dialect probably also has the fewest speakers of any Northern Paiute dialect. There are no more than 5-10 speakers, the youngest of whom is middle-aged.

The data presented here come from a single female speaker. Recordings were made in a quiet room of the Bridgeport senior citizens’ center with a Marantz PMD670 solid-state recorder and a head-mounted AKG microphone. The orthographic system we use, which we designed for the Mono Lake Northern Paiute community, is phonemic and maintains the correspondence between one sound and one symbol.

Consonants

Mono Lake Northern Paiute has 25 consonants, shown in Table 1. These consonants contrast in seven places and five manners. The oral plosives exhibit a three-way contrast between what are

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1 Since these recordings were made in the field, it was impossible to avoid a certain amount of ambient noise. In particular, in some of the recordings there is a periodic signal at approximately 5,000 Hz caused by electrical interference.
traditionally called **LENIS, VOICED FORTIS, and FORTIS** realizations. Fricatives and nasals exhibit a two-way contrast between lenis and fortis realizations. These contrasts are illustrated by the following near minimal pairs:

(1) /b/ **tūba** /tibba/  
    ‘pinenut (n.)’

/bb/ **tūbba** /tibba/  
    ‘mouth’

/p/ **tiipa** /tipa/  
    ‘earth’

/d/ **adii** /adi/  
    ‘gun’

/dd/ **adda’i** /addaʔi/  
    ‘diarrhea’

/t/ **kati** /kati/  
    ‘sit (durative)’

/g/ **sugu** /ɕuɡu/  
    ‘robin’

/gg/ **puggu** /puggu/  
    ‘horse’

/k/ **tuku** /tuku/  
    ‘flesh, skin’

/gʷ/ **saɡwa’ni** /ɕaq”aʔni/  
    ‘a little bit’

/ggʷ/ **paggwi** /paggw“i/  
    ‘fish (n.)’

/kʷ/ **akwisi’e** /ak”iʃiʔe/  
    ‘sneeze (v.)’

/dz/ **kudzabi** /kudzabi/  
    ‘brine fly pupae’

/dz/ **taddza** /tadz“a/  
    ‘summer’

/ts/ **patsa** /patsa/  
    ‘kill (v.)’

/m/ **tama** /tama/  
    ‘tooth’

/mm/ **kamma** /kamma/  
    ‘taste (tr.)’

/n/ **sono** /ɕono/  
    ‘lung’

/nn/ **hanno** /hanno/  
    ‘where’

/c/ **pisa’yu** /piçaʔju/  
    ‘good’

/cç/ **kassa** /kacca/
The contrast between lenis, voiced fortis, and fortis consonants only occurs in word-medial position. It is neutralized word initially, as we discuss below.

Plosives

Mono Lake Northern Paiute’s unique three-way contrast is manifested acoustically in closure duration, aspiration duration, and voicing during the closure interval. This contrasts with the typical textbook usage where ‘lenis’ and ‘fortis’ are defined in terms of respiratory or articulatory energy (Ladefoged and Maddieson 1996:95-98).

The lenis plosives have a shorter closure duration and trend toward shorter aspiration duration. In running speech, they often surface as voiced fricatives, [β] or [γ], in the case of bilabial and velar plosives, or as a voiced tap, [ɾ], in the case of alveolar plosives:

(2) a. Bilabial: tüba [tʰiβa ~ tʰiβa] ‘pinenut’
   b. Alveolar: adü [adɬi ~ arɬi] ‘gun’
   c. Velar: sugu [ɕuɡu ~ ɕuɡu] ‘robin’
   d. Labialized velar: sagwa’ni [çaɡwəʔni ~ çɑγwəʔni] ‘a little bit’

The lenis plosives contrast with the voiced fortis and fortis plosives in aspiration and closure duration, as shown in Figure 1. Voiced fortis and fortis plosives overlap, with considerably longer aspiration and closure durations. These latter categories, in turn, contrast with one another in the presence or absence of voicing during the closure. As the pair of spectrograms in Figure 2 show, the (voiced fortis) velar closure of /pugu/ ‘horse’ shows voicing through the closure, while the (fortis) closure of /tuku/ ‘flesh, skin’ does not.

As we mentioned above, lenis, voiced fortis, and fortis plosives only contrast word medially. In word-initial position, the contrast is neutralized. There are no word-final consonants. Generally, word-initial plosives correspond most closely to the fortis category. They are realized as voiceless aspirated stops. On occasion, strong prevoicing does occur, most frequently with noun stems uttered in isolation. Since these nouns, in spontaneous speech, are obligatorily possessed, we attribute this variation to analogy from the default possessed form of nouns, which take the indefinite possessor proclitic /a=/. Thus, /tama/ ‘tooth’ can be realized

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2 In fact, there are no codas at all, except for glottal stops, which can occur word internally: e.g. pisa’yu /picaʔju/ ‘good’.
as [tʰama] or [dʰama]. The alveolar plosive of the latter approximates its counterpart in [a=dʰama] ‘someone’s tooth’.³

The plosives are generally not susceptible to changes in place—with the notable exception of the velar and labialized velar plosives. The lenis, voiced fortis, and fortis velar plosives are all backed, approaching a uvular-like articulation, when they are preceded or followed by /a/:

(3) a. /a/ precedes: katü [qʰati] ‘sit (durative)’
b. /a/ follows: oka [qʰa] ‘that (objective)’
c. /a/ absent: tuku [tukʰu] ‘flesh, skin’

Affricates

The affricates, like the plosives, show a three-way contrast between lenis, voiced fortis, and fortis realizations. The lenis affricative often surfaces as a voiced alveolar fricative:

(4) kudzabi [kʰudzabi] ~ [kʰuzabi] ‘brine fly pupae’

As shown in Figure 3, the lenis affricate contrasts with the voiced fortis and fortis affricates in both stop duration and fricative duration. But, again, as with the plosives, the voiced fortis and fortis affricates are distinguished by voicing.

Nasals

While, in more northerly dialects of Northern Paiute, nasals show a three-way distinction in place—bilabial, alveolar, and velar—the Mono Lake variety only has a two-way distinction—bilabial and alveolar (northern dialect data from Liljeblad 1966):

(5) Mono Lake Northern dialects
   a. tama /tama/ /tama/ ‘tooth’
   b. sonapi /conapi/ /sonapi/ ‘pitch, sap’
   c. sono /conɔ/ /conɔ/ ‘lung’

Both bilabial and alveolar nasals show a distinction in nasal murmur duration, as shown in Figure 4. The lenis nasals are short, and the fortis nasals long.

Sibilants

Mono Lake Northern Paiute has a coronal fricative best-described as an alveolo-palatal sibilant, /ɕ/. Like the nasals, the alveolo-palatal sibilant participates in a two-way lenis-fortis contrast. The lenis sibilant has a shorter fricative duration than the fortis sibilant, as shown in Figure 6.

The sibilant has a palatalized allophone following /i/, characterized by higher laminal contact of the tongue surface and lip rounding:

³ The realization a plosive takes at a morpheme juncture depends on the preceding morpheme. The indefinite possessor proclitic, for instance, triggers a voiced fortis realization. This system of consonant mutation, Numicists call ‘final features’ (see Nichols 1974 for extensive discussion).
(6) a. /i/ precedes: \textit{pisa’yu} \textipa{[pʰiɕəʔju]} ‘good’
b. /i/ absent: \textit{kassa} \textipa{[kaɕɕa]} ‘wing’

As shown in Figure 5, the prominent spectral peak of the palatalized allophone (represented by the solid grey line) is around 4,000 Hz, lower than that of the nonpalatalized allophone (represented by the solid black line), whose prominent peak lies around 6,000 Hz.\footnote{In younger speakers, the nonpalatalized allophone of the alveolo-palatal sibilant is often replaced with [s] and its palatalized allophone with [ʃ] (Babel 2009).} The spectra in Figure 5 have been averaged across four tokens for each of the words in (6).

\textbf{Vowels}

Mono Lake Northern Paiute has six monophthongs, presented in Figure 7. Five of them—all except /eː/—exhibit a phonemic length contrast. After describing the phonetic properties of the monophthongs, we turn to a discussion of potential diphthongs and the idiosyncratic vowel /eː/.

\textbf{Monophthongs}

Formant values for the six monophthongs are presented in Figure 8, plotted logarithmically in two-dimensional F1-F2 space. Measurements were taken at the vowel midpoint and averaged across the consultant’s productions recorded for the purposes of this illustration. The long vowels occupy the periphery of the vowel space, having more extreme F1 and F2 values than the short vowels.

All of the monophthongs except for /eː/ exhibit a binary length distinction, as illustrated by the following near minimal pairs:

\begin{enumerate}
\item a. \textit{hudziba} \textipa{[huऱziba]} ‘bird’
\item b. \textit{opo} \textipa{[ɔpɔ]} ‘round basket’
\item c. \textit{pa’a} \textipa{[paʔa]} ‘high’
\item d. \textit{üdüüti} \textipa{[idîti]} ‘hot’
\item e. \textit{tsimu} \textipa{[ʦimu]} ‘hip’
\end{enumerate}

\begin{enumerate}
\item [huːpʊ] \textipa{[huːpi]} ‘river’
\item oopi \textipa{[ɔpi]} ‘willow stick’
\item paa’a \textipa{[paʔa]} ‘water’
\item süübi \textipa{[sibĩ]} ‘willow’
\item sii \textipa{[siː]} ‘onion’
\end{enumerate}

Vowel durations were averaged across all tokens recorded for the sketch; long vowels averaged 193 ms (sd = 56), while short vowels averaged 131 ms (sd = 52). Since /eː/ does not exhibit a length contrast, it is not illustrated above—it is only long.

\textbf{The vowel /eː/}

The vowel /eː/ deserves special mention. Unlike the other monophthongs it does not exhibit a length contrast. Instead, it is always long. The phonetic realization of this vowel, moreover,
shows some variation. It is variably realized as a monophthong, [eː], or as a diphthong, [ai] or [ei]:

\[(11)\] Mono Lake Bannock
e-go [eːɡɔ] ~ [eiɡɔ] [iɡɔ] ‘tongue’

Mono Lake is the only variety of Northern Paiute to have this vowel. In northern varieties of Northern Paiute—for instance, Bannock of Fort Hall, Idaho—/eː/ has merged with /i/, as illustrated in (11) (data from Liljeblad 1966:75).

The vowel /eː/ shows its diachrony on its sleeve, so to speak. It is the reflex of the Proto-Numic diphthong *aɪ, or what Nichols (1974:36-50) calls the proto-Numic ‘sixth vowel.’ This explains why it is invariably long and why it is variably realized as a diphthong.\(^5\)

**Word-level stress**

Primary word stress falls predictably on the second mora. This means that when the first syllable of a word contains a long vowel, primary stress is word initial, as in (13a). Otherwise, as in (13b), primary stress falls on the second syllable.

\[(13)\] a. paa’a [pʰaʔa] ‘water’
   b. pa’a [pʰaʔa] ‘high’

In Mono Lake Northern Paiute, stress is cued by pitch and vowel length. Vowels in stressed syllables are higher in pitch and have longer durations than equivalent vowels in unstressed syllables. This is shown in Figure 9, which plots the duration and fundamental frequency of stressed and unstressed syllables.

One of Mono Lake Northern Paiute’s most notable phonological features—devoicing—interacts with stress. Any vowel following a primary stressed syllable can be devoiced, though typically word-final vowels are affected. For instance, the last word of the third sentence of the recorded passage below, opiwünüpütuhu ‘make willow string’, is realized as [ɔ′pʰiwinipʰtʰuθuh] with devoiced vowels in the final two syllables.

**Transcription of a recorded passage**

We present here a spontaneous procedural text, ‘Gathering willow and making baskets,’ spoken by Madeline Stevens and translated by Grace Dick.

\(^5\) In this respect, /eː/ contrasts with real /ai/ vowel-vowel sequences, whose phonetic realization are invariant in all dialects of Northern Paiute.
Community orthography


Phonemic transcription

jìˈbanɔ nìmì mi ɕːgɡanɔ a=naˈqʰaβɔɾɔmànɛqʰaˈçɛj. ɕɛmì ɕiːɡɡaβɔɾɔnɔ ˈjeˈçi ɕpʰiːdʊnə. ˈjeˈçi ɾaˈnmì ɕpʰiwiˈniptʰuˈhʊ. ˈcaʔa ɔqʰa maˈlmaːɡʍiːˈçi ˈjeˈçi niˈmì ɕpʰɔɾmaraˈbʊʔi. ˈjeˈçi tʰuˈazʊ jəˈdətʰu. tʰuˈazʊ wəˈnɔtʰu. ʊniqʰa nìmì maˈɾaʔe ˈcaʔa ɕ ʻpʰiwiˈniˌmimma ɕiːβi haˈnimacʍiːj. ˈmihu=ɕabbʰi ˈjeˈçi nìi ɕiːβiɡgʷeˈtʰu wəˈhə.

Phonetic transcription

jiˈbənɔ nıˈmì mi ɕiːɡɡanɔ a=naˈqʰaβɔɾɔmànɛqʰaˈçɛj. ɕɛmì ɕiːɡɡaβɔɾɔnɔ ˈjeˈçi ɕpʰiːdʊnə. ˈjeˈçi raˈnmì ɕpʰiwiˈniptʰuˈhʊ. ˈcaʔa ɔqʰa maˈlmaːɡʍiːˈçi ˈjeˈçi niˈmì ɕpʰɔɾmaraˈbʊʔi. ˈjeˈçi tʰuˈazʊ jəˈdətʰu. tʰuˈazʊ wəˈnɔtʰu. ʊniqʰa nıˈmì maˈɾaʔe ˈcaʔa ɕ ʻpʰiwiˈniˌmimma ɕiːβi haˈnimacʍiːj. ˈmihu=ɕabbʰi ˈjeˈçi nìi ɕiːβiɡgʷeˈtʰu wəˈhə.

Translation

In the autumn, we gather willows after they’re done losing their leaves. At that time, we go around collecting willows, and then we clean the bark off them. We then make willow string. Later, after we finish that, we make round baskets. Or then we make winnowing baskets. Or we make burden baskets. We learn to make those kinds later with the willow string, after we’re done gathering the willow. That’s all I have to say about willows.

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Table 1. Mono Lake Northern Paiute consonants.

**Medial stops**

Figure 1. Lenis plosives contrast with voiced fortis and fortis plosives in aspiration and closure duration.
Figure 2. Voiced fortis and fortis velar plosives contrast in voicing during closure.

Affricates

Figure 3. Lenis affricates contrast with voiced fortis and fortis affricates in both stop duration and fricative duration.
Figure 4. Lenis and fortis nasals contrast in murmur duration.

Figure 5. Lenis (“s”) and fortis (“ss”) sibilants contrast in fricative duration.
Figure 6. Prominent spectral peak of palatalized fricatives (grey line) is lower than that of unpalatalized fricatives (black line).

Figure 7. Mono Lake Northern Paiute monophthongs.
Figure 8. Mono Lake Northern Paiute monophthongs charted in two-dimensional F1-F2 space. (“o” represents the low-mid back vowel /ə/, and “y” the high central vowel /i/.)

Figure 9. Stressed syllables (“+”) are higher in pitch and longer in duration than unstressed syllables (“–”).