

sy-
rinx
bird
calls
Clear:
Buzzy:
Thrilled:
Partly
Buzzy
*rend.png*Classificationbypitchtrends.
syl-
la-
bles
phrases
*sctions.png*Classificationbynumberofsection.Thisclassificationcanbedoneevenwhenthongspectrumiscomplex,whereth
?
sy-
rinx
*sound_organ.png*Birdrespiratorysystemanatomy.[?]
*paloma.png*Soundproductionactors : **the syrinx**,airsacs,trachea,andbeak.Imagetakenfrom[?].
??

labia??
*muscles.png*Syringealmuscles[?].
??
??
spectrum-
032Independentsyrinxoscillationsanditscorrespondingspectrograms[?]
syrinx-
013Syrinxoscillations.Manybirdshavetwoindependentsyrinxtomodulatetheairandproducesbirdsongs,someofthemareabl
??
??
?
wave-
form
 $\frac{1}{f}$
1
*pitch.png*Soundpitch[?]
*sound.png*Soundhumanbrainunderstanding[?]
 m
 β
 γ
 r
 $T =$
 L/C
 $y =$
 x'
?
?
mo-
tor
ges-
tures
model
?
 $\xi'' +$
 $b\xi' +$
 $k\xi =$
 $f(\xi(t), \xi'(t), t)$
 $\xi, \xi',$
 ξ''
 m
 k
 b
 f
 t
 f

?

*gestures.png*Syrinxbehaviorillustrationandlabialdynamics.Thepanel(a)illustratesthepresentorganactorsandtheirsha
mo-
tor
ges-
tures