Rediscretization_Temporal

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Rediscretization of Tracks - 20 seconds between positions

- Using primary and secondary filtered data to rediscretize tracks for further analysis
- Tracks have been split into bursts where successive positions were seperated by > 50m
- this threshold can be altered in "Final_Filtering.Rmd" if desired
- Before redistretizing, remove bursts with < 10 positions (too few to rediscretize in adehabitatLT)
- also note that the interval of 20 seconds was selected to be consistent with the 2015 analysis; another script will discretize at 2 seconds to be more consitent with ELAM outputs and USGS analysis

```
## [1] 102571     16
```

```
## [1] 641
```

```
## [1] 1161
```

```
## [1] 160.01716068642745
```

```
## [1]   3 578
```

```
## [1] 88.347114556416884
```

```
## [1]   3 578
```

```
## [1] 67.643759819729937
```

```
  bursts.rem = data.frame(ndetects.burst[ndetects.burst$ndet<10,])
     nrow(bursts.rem) # 217 bursts removed
```

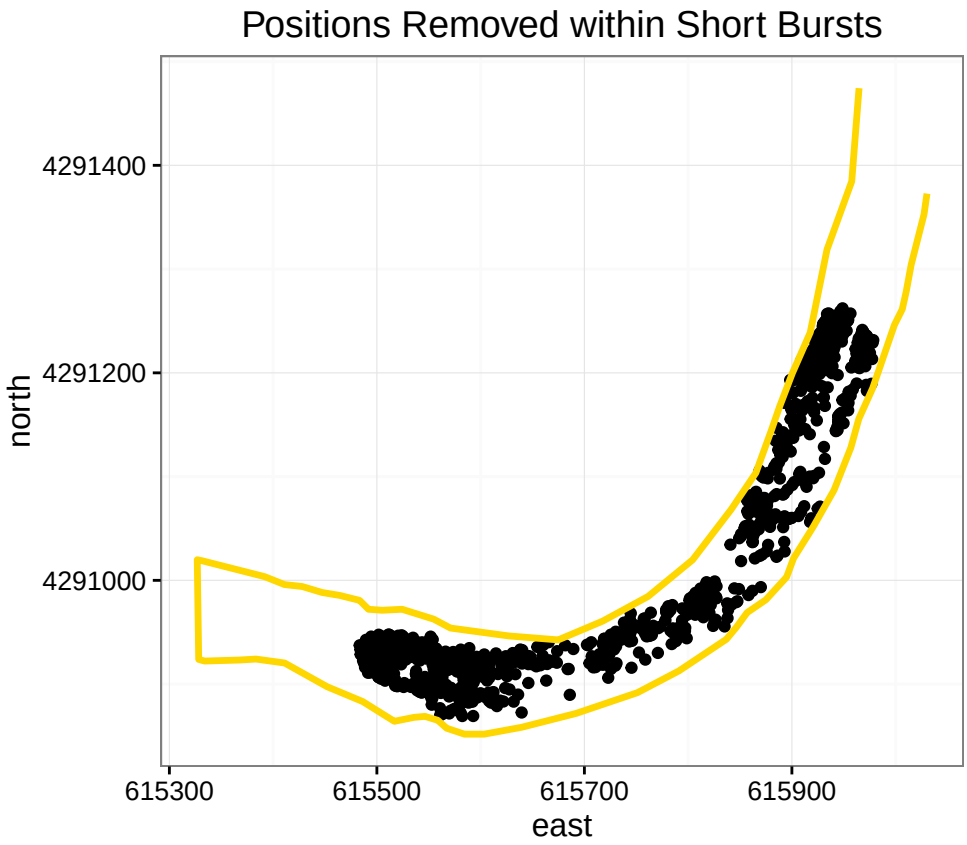
```
## [1] 217
```

```
    sum(bursts.rem$ndet) # 1154 positions removed
```

```
## [1] 1153
```

```
  red.br =  red7[(red7$burst %in% bursts.rem$burst),]

  river3 = fortify(river3)
  ggplot(data = red.br, aes(x=east, y=north)) + geom_point() +
    geom_path(data = river3, aes(long, lat), col="gold", size=1.2 ) +
    ggtitle(label = "Positions Removed within Short Bursts") +
    theme_bw() + coord_fixed()
```




```
red8 = red7[!(red7$burst %in% bursts.rem$burst),]

red8.ltraj = as.ltraj(xy=red8[,c("east","north")], date=red8$date,
                      id=factor(red8$id), burst = factor(red8$burst),
                      infolocs=red8[,c("Hpes","east","north")])
```

Discretize in Time

```
# discretize in time
red8.trdz = ld(redisltraj(red8.ltraj, u=20, type="time", nnew=50))
 red8.trdz$run = "LFC" # creates a common grouping variable to make UD with all points
 red8.trdz=red8.trdz[order(red8.trdz$id,red8.trdz$date),]

# recalculate migration speed
 red8.trdz$spd_mps = red8.trdz$dist / red8.trdz$dt
```

Add sac river stage from CDEC

```
# Fish Releases
  fishrel = read.csv("C:/Users/Anna/Documents/GitHub/Fremont16/Maestros/TagReleaseList.csv", colClasse
      fishrel$datetime = as.POSIXct(paste(fishrel$RelDate, fishrel$RelTime), format="%Y-%m-%d %H%M")
```

```
        names(fishrel)[3] <- "id"
        names(fishrel)[ncol(fishrel)] <- "datetime.Rel"

   red8.trdz = merge(red8.trdz, fishrel[,c("RelEv","CanID","id","RelLoc","datetime.Rel")], all.x=T)

  red8.trdz$RelHr = as.POSIXlt(red8.trdz$datetime.Rel)$hour

  red8.trdz$cdecStgIndex = NULL

  ## write this to file
  saveRDS(red8.trdz, "Maestros/RediscTime_20s.RData")
```

And finally, output the general metrics about the remaining dataset

```
    dim(red8.trdz) # 19170 detections after discretization
```

```
## [1] 19170    22
```

```
    length(unique(red8.trdz$id))  # 643
```

```
## [1] 634
```

```
    ndetects.discr = summarize(group_by(red8.trdz, id), ndet = n())
      mean(ndetects.discr$ndet) # 30.2 per fish
```

```
## [1] 30.236593059936908
```

```
      range(ndetects.discr$ndet) # ranges from 4 - 207
```

```
## [1]   4 207
```

```
    max(red8.trdz$spd_mps, na.rm=T)  # 2.72 mps
```

```
## [1] 2.721658822715546
```