

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 separated by > 50m
- this threshold can be altered in “Final_Filtering.Rmd” if desired
- Before rediscretizing, 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 consistent with ELAM outputs and USGS analysis

```
## [1] 81895    16
```

```
## [1] 430
```

```
## [1] 665
```

```
## [1] 190.45348837209303
```

```
## [1] 17 578
```

```
## [1] 123.15037593984962
```

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

```
## [1] 42.826354693016988
```

```
bursts.rem = data.frame(ndetects.burst[ndetects.burst$ndet<10,])  
nrow(bursts.rem) # 107 bursts removed
```

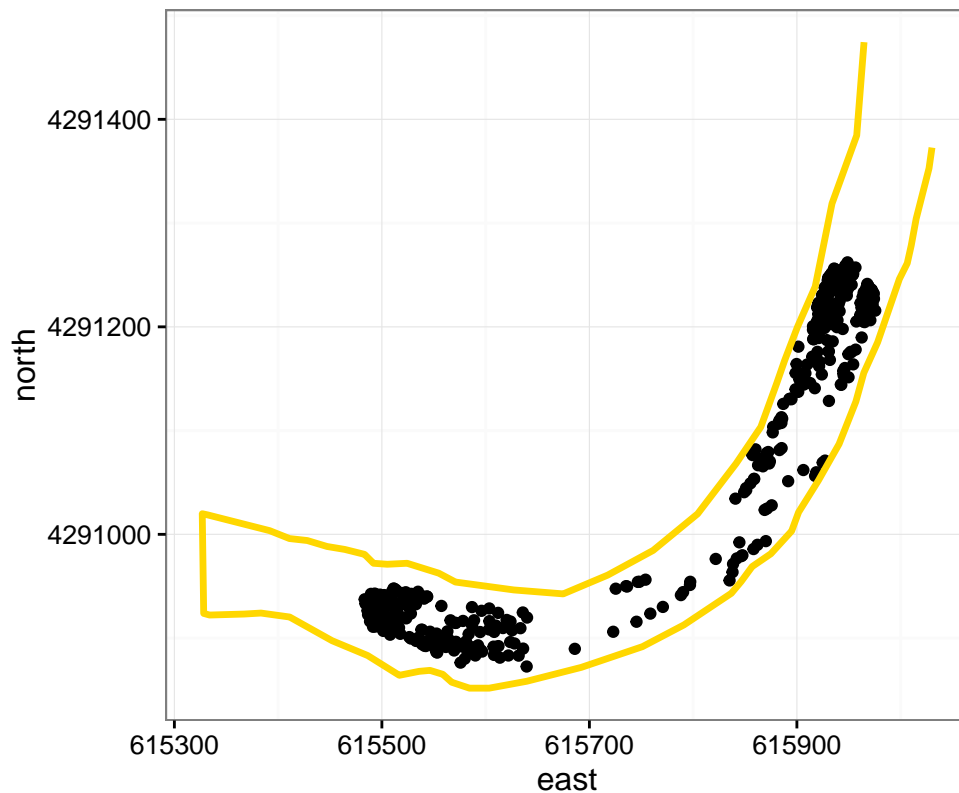
```
## [1] 107
```

```
sum(bursts.rem$ndet) # 535 positions removed + 166 removed when cutting into brsts = 701 positions
```

```
## [1] 535
```

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

Positions Removed within Short Bursts



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

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

And finally, output the general metrics about the remaining dataset

```
dim(red8.trdz) # 14770 detections after discretization
```

```
## [1] 14779    31
```

```
length(unique(red8.trdz$id)) # 430
```

```
## [1] 430
```

```
ndetects.discr = summarize(group_by(red8.trdz, id), ndet = n())  
mean(ndetects.discr$ndet) # 34.4 per fish
```

```
## [1] 34.369767441860468
```

```
range(ndetects.discr$ndet) # ranges from 5 -207
```

```
## [1] 5 207
```

```
max(red8.trdz$spd_mps, na.rm=T) # 2.11 mps
```

```
## [1] 2.1134942583913587
```