Exploration Data Filtering Predators

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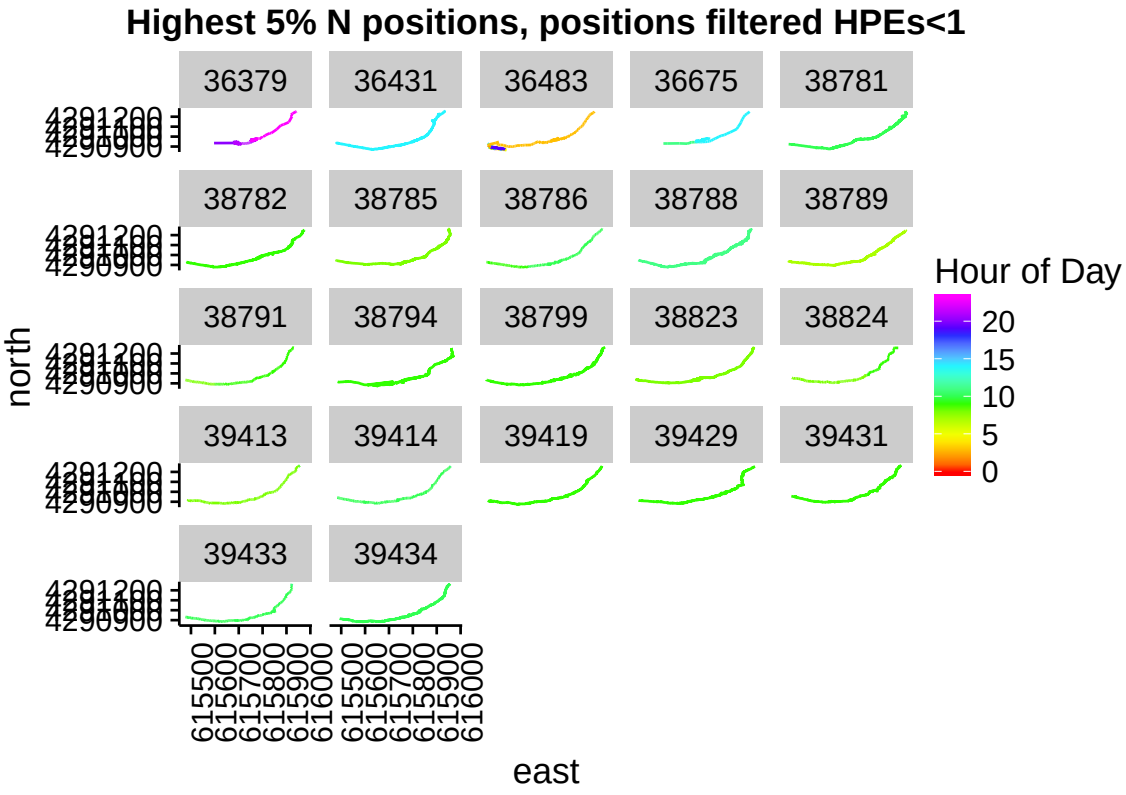
A subjective assessment of tracks indicates some may include predators

- high number of detections
- long passage time
- exiting the array at the upstream end
- pass through array then return in future

```
# primary and seconary filtered data
load("Maestros/AllFish_FiltSec1Speed.RData")
```

High Number of Detections

- plot shows tracks for fish with the top 5% of recorded positions, colored by hour of day

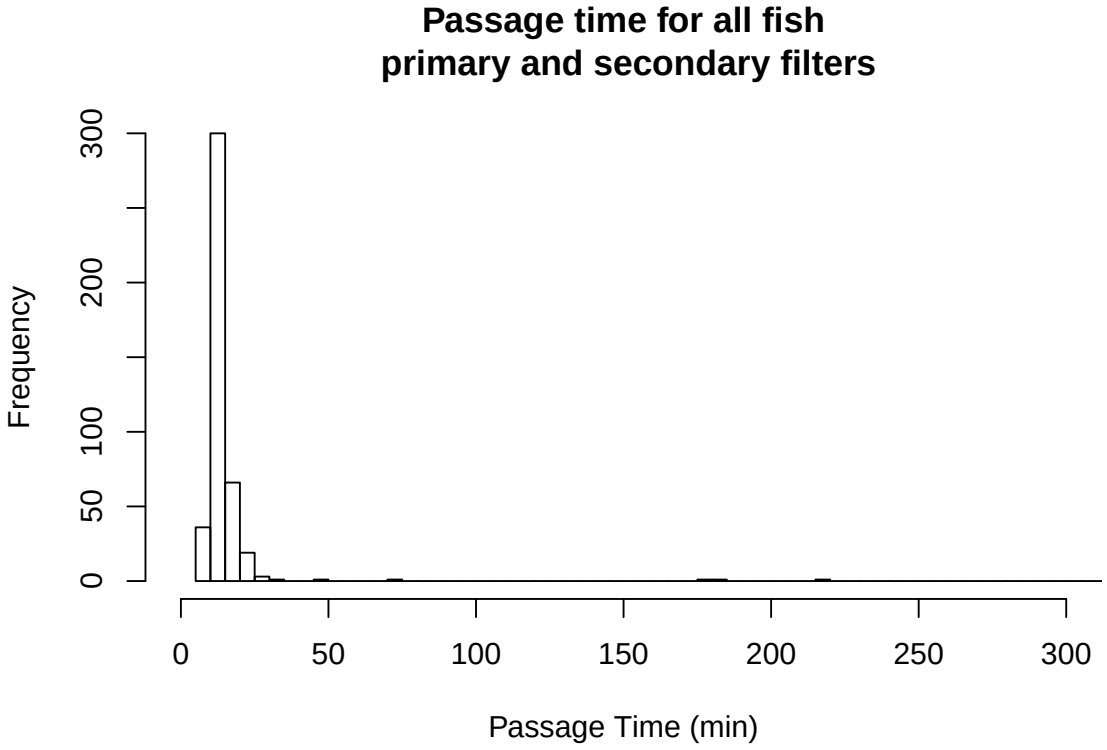


Most of these tracks with many detections look normal; only 36483 and 36379 attract my attention

- from tagID 38794 (and 38823) I feel that the excessive speed filter might not be quite tight enough

Long Passage Time

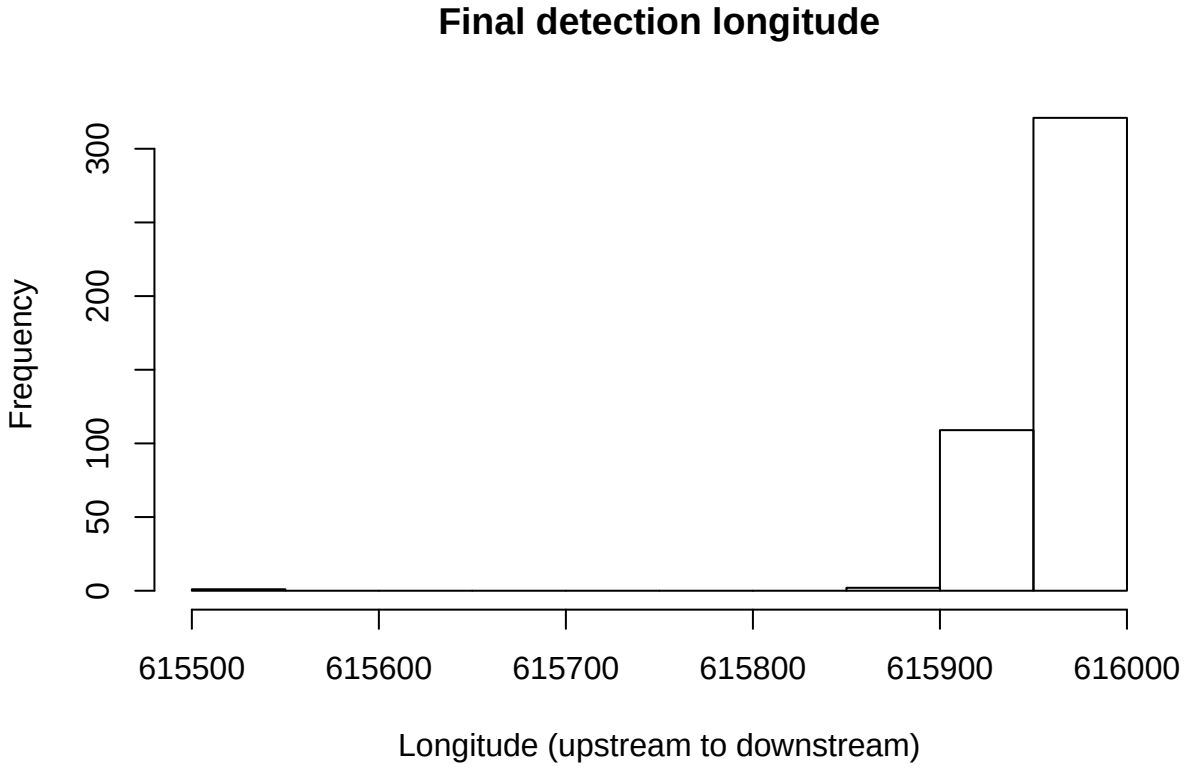
- look at time elapsed between first and last positions; look closer at tracks with longest intervals




```
## [1] "6 individual tags with >150 min passage time"
```

```
## [1] "TagIDs 36379" "TagIDs 36398" "TagIDs 36472" "TagIDs 36483"
## [5] "TagIDs 36612" "TagIDs 36675"
```

Exits array at upstrem end

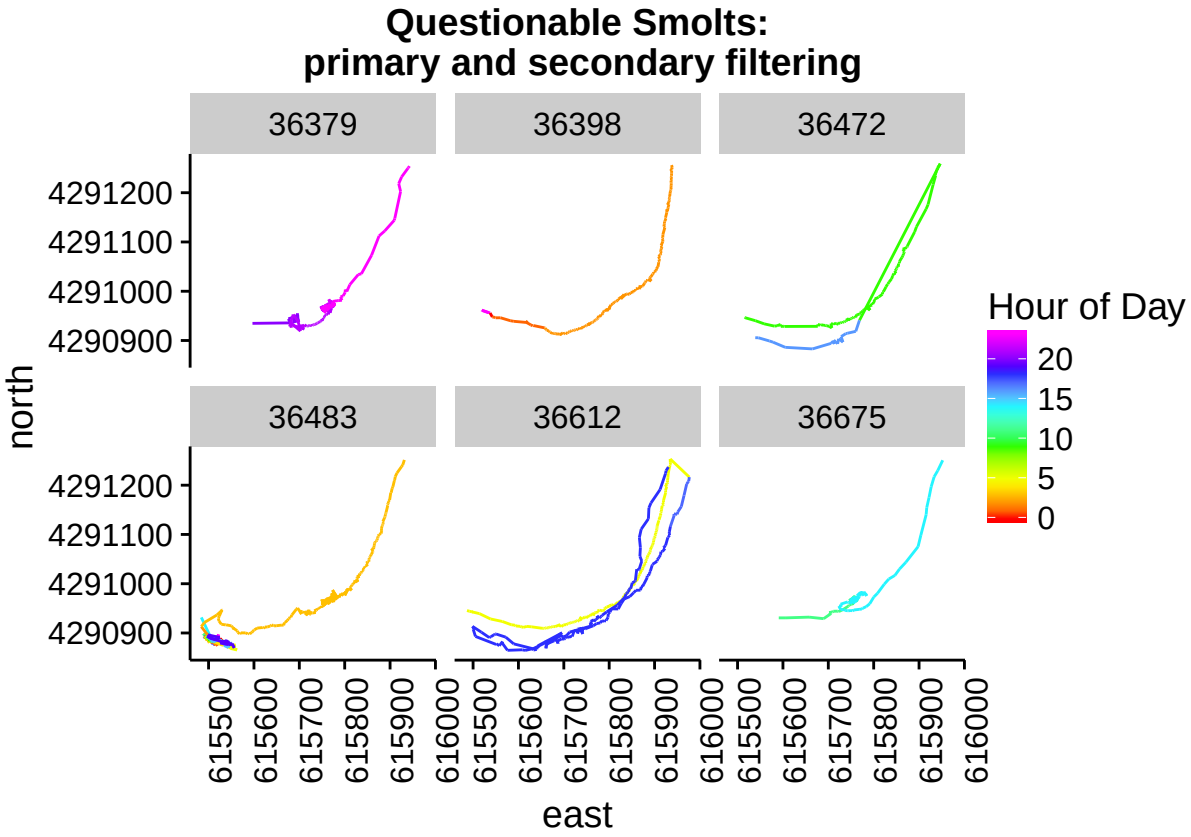



```
## [1] "1 fish exited at upstream end of array"
```

```
## [1] "TagIDs 36472"
```

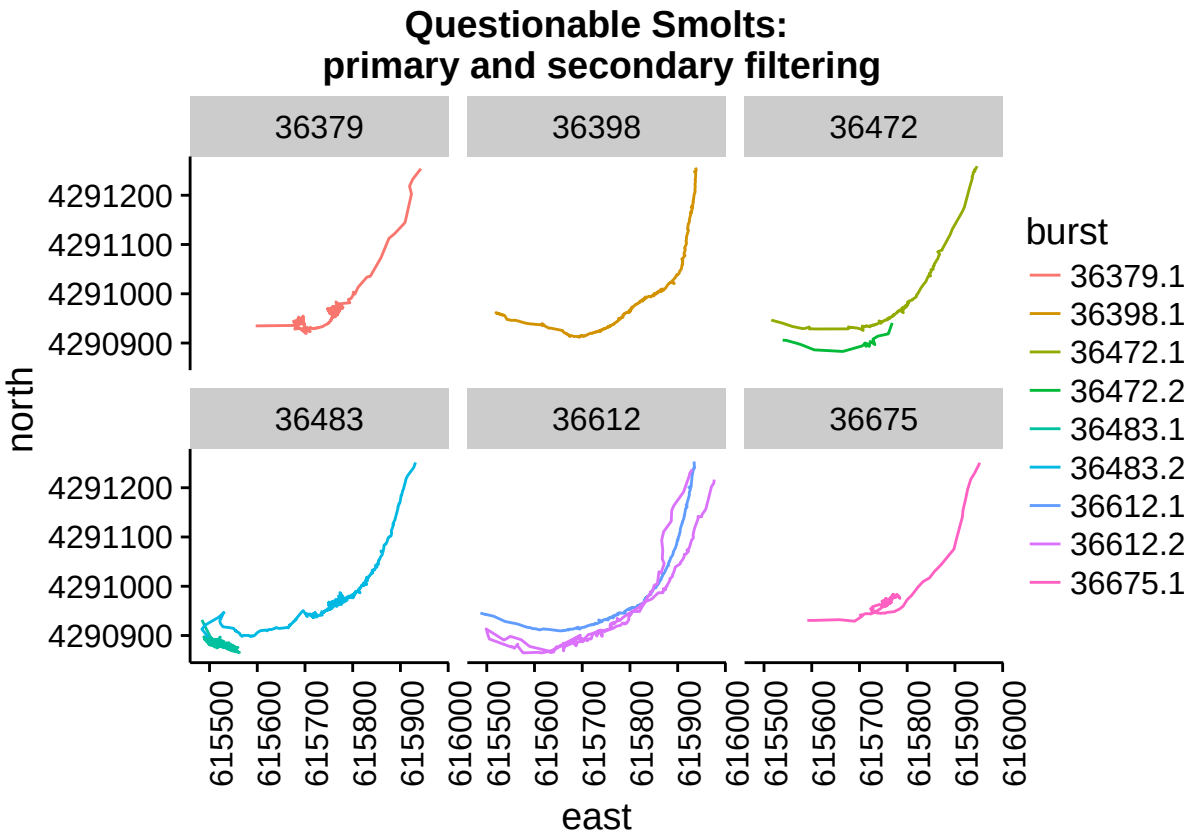
The only fish to exit at the top is also in the category of long passage times (36472)

Plot the tracks of all fish IDs which raised a red flag



cut tracks into sub-bursts when gaps are > a selected time threshold to split by absence from the array

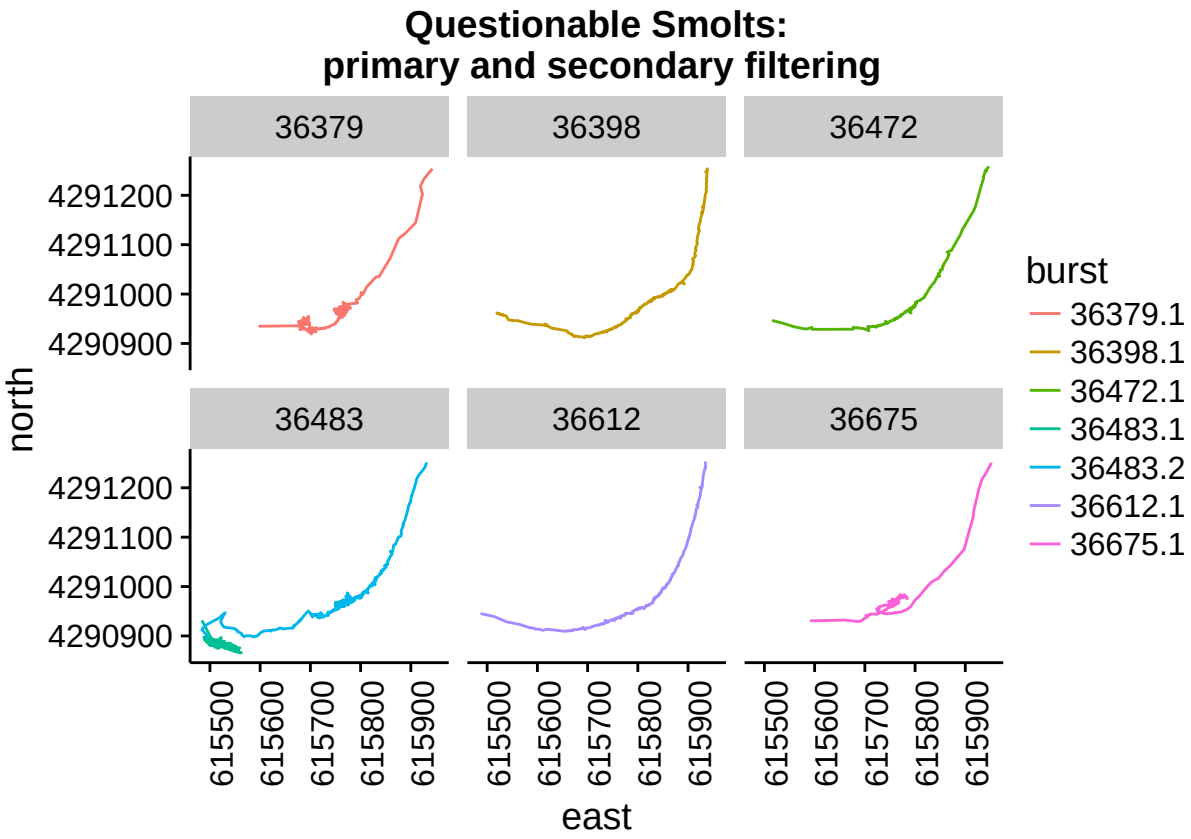
```
dt_threshold = 6*3600  # 6 hours

dtcut = function(dt) { return (dt > dt_threshold) }

red4.ltraj = dl(red4)
red5.ltraj <- cutltraj(red4.ltraj, "dtcut(dt)", nextr=TRUE)

red5 = ld(red5.ltraj)

    ggplot(data=red5[red5$Id %in% c(highn.fish,long.fish),], aes(x=east, y=north)) +
     geom_path(aes(colour=burst)) + facet_wrap(~Id, ncol=3) +
     ggtitle("Questionable Smolts:\n primary and secondary filtering") +
     theme(axis.text.x = element_text(angle = 90, hjust = 1))
```



Remove the later halves of the two split tracks

- Tag 36612 absent 12.1 hours before returning to array: – last detection of burst 36612.1 @ 2016-02-23 5:50:38; first of burst 36612.2 @ 2016-02-23 17:56:21
- Tag 36472 absent 13.3 Days before returning to array: – last detection of burst 36472.1 @ 2016-02-23 5:50:38; first of burst 36472.2 @ 2016-02-23 17:56:21

```
red5 = red5[!(red5$burst %in% c(36472.2, 36612.2)),]
```



Is there a predation hotspot here? Or are smolts holding along the bank?

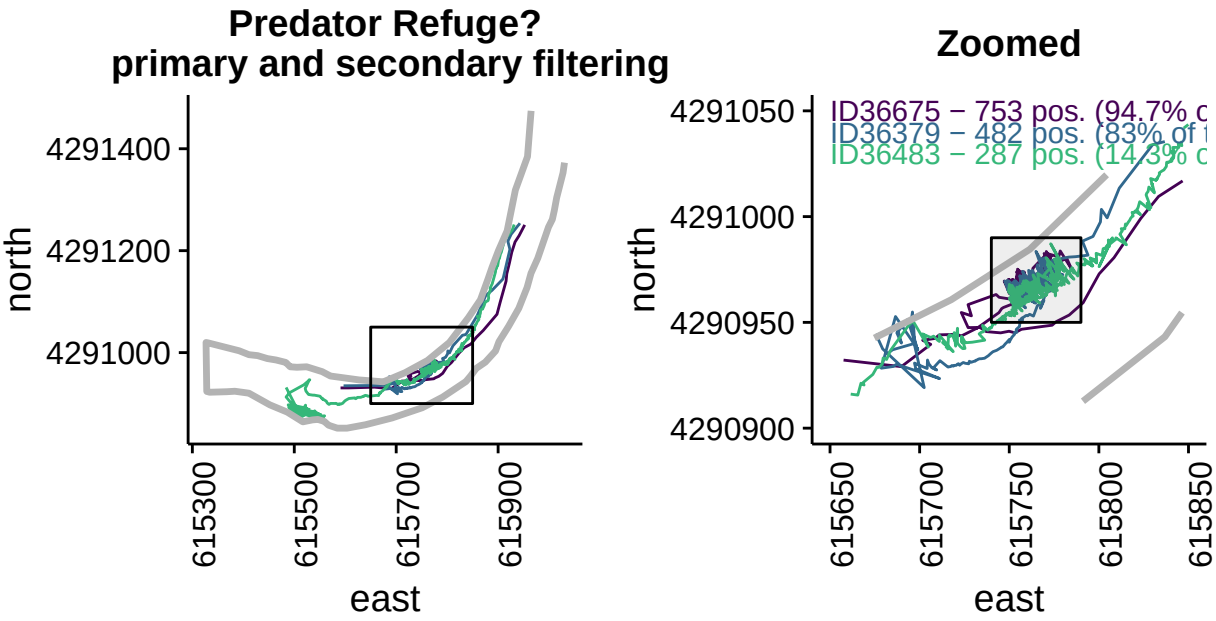
```
## OGR data source with driver: ESRI Shapefile
## Source: "C:/Users/Anna/Documents/GitHub/Fremont16/GIS/2004_channel", layer: "2004_channel_freTightcl
## with 2 features
## It has 1 fields
```

```
## Warning: Removed 13 rows containing missing values (geom_path).
```

```
## Warning: Removed 12 rows containing missing values (geom_path).
```

```
## Warning: Removed 1578 rows containing missing values (geom_path).
```

```
## Warning: Removed 24 rows containing missing values (geom_path).
```


Predator Refuge?
primary and secondary filtering
north
4291400
4291200
4291000
615300
615500
615700
615900
east
Zoomed
north
4291050
4291000
4290950
4290900
615650
615700
615750
615800
615850
east