**Notes on package twoplane, and changes needed**

These need planespd passed to them if they are to be modified to accommodate non-normal f\_T(t):

p.omega.t

When adjusting for forward time being different from k, need

p.omega.k

Else need

p.omega.t

**segfit.cpp**

1. Calls optim with objective function segnegllik.cpp.mix.io

**segnegllik.cpp.mix.io**

1. Calculates Q
2. Calculates M
3. Uses them to call p.omega.t , which calculates p01.k, p10.k, p11.k, the capture history probabilitis for lag k
4. Passes everything to rcpp\_compute\_likelihood to evaluate likelihood in C++

**Problems**

1. Curently segnegllik.cpp.mix calculates the TPM (Gamma in manuscript), and hence p\_omega(t) with t=lag k always, NOT averaging over f\_T(t) as in equation (10) of manuscript, and NOT with individual differences between detections in the case of omega=(11). This should make no difference if f\_T(t) is symmetric (as it is, except when animal speed is a substantial fraction of observer speed – like more than half the observer speed; see ft\_plots.r).
2. segnegllik.cpp.mix and segnegllik.cpp.mix.io do virtually the same thing – should get rid of segnegllik.cpp.mix in favour of segnegllik.cpp.mix.io.