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## Better R-code to estimate parameters of the epsilon-skew-normal curve ##
1. fit the model using mle2: this particular version of the model is called Par5.fit
2. extract the 5 coefficients of interest: k.5 etc
3. finally rerun ESN6 by itself in order to get the fits over a grid of x values.
################################################################################
library(bbmle)
ESN6 <- function(x,k,mu,sig,eps,gam,eta){
k*exp(-abs(((x-mu)/(sig*(1 + sign(x-mu)*eps))))^(gam*(1 + sign(x-mu)*eta)))}
## Get log-liklehood
LL.6 <- function(k,mu,sig,eps,gam,eta){
-sum(dpois(Kount,lambda=ESN6(Days,k,mu,sig,eps,gam,eta),log=TRUE))}
r1 <- range(206:272)
r2 <- range(inflower,na.rm=TRUE)
plot(r1,r2*1.1,xlab="Day-of-year",ylab="Blooms",type='n',cex.axis=1.2,cex.lab=1.2)
Grid <- seq(r1[1],r1[2],by=0.2)
## Get MLE (using starting values from a simpler 4 parameter model)
Par5.fit <- mle2(LL.6,start=list(k=k.4,mu=mu.4,sig=sig.4,eps=eps.4,gam=2,eta=0),
method="Nelder-Mead",fixed=list(eta=0))
summary(Par5.fit)
k.5 <- as.numeric(coef(Par5.fit)[1])
mu.5 <- as.numeric(coef(Par5.fit)[2])
sig.5 <- as.numeric(coef(Par5.fit)[3])
eps.5 <- as.numeric(coef(Par5.fit)[4])
gam.5 <- as.numeric(coef(Par5.fit)[5])
Fit.Grid <- ESN6(Grid,k.5,mu.5,sig.5,eps.5,gam.5,0)
lines(Grid,Fit.Grid,col="blue",lwd=2)
abline(v=mu.5,col="blue",lwd=2)
```