**Log-Linear Model Approach inspired by Bradshaw 2007**

Notation

*T*1 = Status of tag 1

= 1 if present, 0 else

*T*2 = Status of tag 2

Joint distribution of **T** = (*T*1, *T*2)

,

where

Using this joint distribution we can obtain the following interpretations:

1. Odds of tag loss given other tag present =

2. Odds of tag loss given other tag is lost =

3. Marginal distribution of *T*1

4. Conditional probabilities

**Connection to point independence of Laake and Borchers (2004)**

First, assuming *T*1 is independent of *T*2 the probability that an animal looses both tags is given by

and predicted probability that an animal would retain at least one tag is:

If we do the same thing and allow for dependence then we get the following:

and

After some algebra, the dependence measure in Laake and Borchers (2004) can be expressed as: