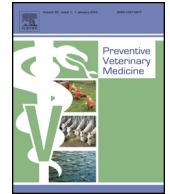




ELSEVIER

Contents lists available at ScienceDirect

## Preventive Veterinary Medicine

journal homepage: [www.elsevier.com/locate/prevetmed](http://www.elsevier.com/locate/prevetmed)

Short communication

## Participatory methods for the assessment of the ownership status of free-roaming dogs in Bali, Indonesia, for disease control and animal welfare



M.K. Morters<sup>a,\*</sup>, S. Bharadwaj<sup>b</sup>, H.R. Whay<sup>c</sup>, S. Cleaveland<sup>d</sup>,  
I. Md. Damriyasa<sup>e</sup>, J.L.N. Wood<sup>a</sup>

<sup>a</sup> Disease Dynamics Unit, Department of Veterinary Medicine, University of Cambridge, Cambridge, United Kingdom

<sup>b</sup> Praxis-Institute for Participatory Practices, New Delhi, India

<sup>c</sup> Faculty of Medical and Veterinary Sciences, University of Bristol, United Kingdom

<sup>d</sup> Institute of Biodiversity, Animal Health and Comparative Medicine, University of Glasgow, Glasgow, United Kingdom

<sup>e</sup> Fakultas Kedokteran Hewan, Universitas Udayana, Bali, Indonesia

## ARTICLE INFO

## Article history:

Received 21 October 2013

Received in revised form 15 April 2014

Accepted 21 April 2014

## Keywords:

Rabies

Dog

Unowned

Participatory Rural Appraisal

PRA

Mark-recapture

## ABSTRACT

The existence of unowned, free-roaming dogs capable of maintaining adequate body condition without direct human oversight has serious implications for disease control and animal welfare, including reducing effective vaccination coverage against rabies through limiting access for vaccination, and absolving humans from the responsibility of providing adequate care for a domesticated species. Mark-recapture methods previously used to estimate the fraction of unowned dogs in free-roaming populations have limitations, particularly when most of the dogs are owned. We used participatory methods, described as Participatory Rural Appraisal (PRA), as a novel alternative to mark-recapture methods in two villages in Bali, Indonesia. PRA was implemented at the banjar (or sub-village)-level to obtain consensus on the food sources of the free-roaming dogs. Specific methods included semi-structured discussion, visualisation tools and ranking. The PRA results agreed with the preceding household surveys and direct observations, designed to evaluate the same variables, and confirmed that a population of unowned, free-roaming dogs in sufficiently good condition to be sustained independently of direct human support was unlikely to exist.

© 2014 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/3.0/>).

### 1. Introduction

Understanding the characteristics of free-roaming dog populations is essential for the design of effective interventions to control canine diseases, such as rabies, and improve animal welfare. A critical issue relates to the possible existence of unowned, free-roaming dogs that

are in sufficiently good condition to be sustained without direct human oversight. Ownership issues are critical for the design of rabies vaccination campaigns. Owners generally facilitate vaccination of their dogs against rabies (Lembo et al., 2010; Knobel et al., 2013), whereas unowned dogs are likely to be more difficult to identify and access for vaccination, potentially reducing effective vaccination coverage (Hampson et al., 2009), particularly if the fraction of unowned dogs is large. There is increasing evidence that most free-roaming dogs are owned and accessible for prophylaxis (Childs et al., 1998; Matter et al., 1998; Butler

\* Corresponding author. Tel.: +44 1223 337694; fax: +44 1223 337610.  
E-mail address: [mm675@cam.ac.uk](mailto:mm675@cam.ac.uk) (M.K. Morters).

and Bingham, 2000; Estrada et al., 2001; Kayali et al., 2003; Windiyarningsih et al., 2004; Kaare et al., 2009; Lembo et al., 2010; Gsell et al., 2012; Putra et al., 2013). Previous studies, using mark-recapture techniques to evaluate vaccination coverage, generally indicate only a small proportion (<10%) of free-roaming dogs are unowned in a range of urban and rural locations (Fishbein et al., 1992; Matter and Fico, 1998; Matter et al., 1998; Cleaveland et al., 2003; Kayali et al., 2003; Durr et al., 2009; Kaare et al., 2009; Gsell et al., 2012), although estimates with an upper confidence limit as high as 37% have been reported (Vos and Turan, 1998; Matter et al., 2000; Kayali et al., 2003). None of these studies reported the health status of unowned dogs, which remains an important gap in our understanding of these populations. However, there is a perception, implied by the implementation of interventions to reduce reproductive potential of unowned dogs, that these dogs are in sufficiently good condition for the population to be sustained without direct human oversight. An important corollary of this assumption is that it absolves humans from the responsibility of providing adequate care for a domesticated species.

During an intensive three-year study [April 2008–December 2010] in the villages of Antiga and Kelusa, Bali, Indonesia, all identified, free-roaming dogs in the study area were monitored individually by direct observation and household questionnaire every 6–12 weeks (average of 250–300 dogs in each village) (Morters et al., 2014). The study area encompassed most of the village and included every household in the main residential area. Almost all of the identified dogs were owned (i.e. belonged to a household in the study area) and fed regularly by their owner. Consistent with this finding was the observation that the vast majority of the owned dogs were in reasonable or good body condition, and only a small proportion (i.e. Antiga 5.3% and Kelusa 3.1%) “unhealthy” (i.e. with ribs clearly visible and concomitant generalised dermatitis). Only eight of the identified dogs in Kelusa and ten in Antiga did not belong to households in the study areas. All of these dogs were observed on only one occasion over the three year period, and almost all were emaciated (12/16) with severe generalised dermatitis (16/18). The poor condition of these dogs is consistent with the lack of edible refuse in the environment, based on subjective assessment, and householders reportedly rarely feeding dogs other than their own. Therefore, all of the healthy dogs resident in the study areas were identified as owned and fed by their owner, and there was no evidence for a resident population of dogs in reasonable or good body condition not fed daily by an owner.

Similarly, during household surveys the majority (~80%) of householders reported that there were no unowned dogs, with the remainder reporting generally ≤10 unowned dogs at any one time in the community. Householders generally assumed dogs to be unowned based on their health and confinement status (i.e. “thin with bad skin” and “on the street”) rather than specific knowledge of an owner. Overall, these results suggested that a sub-group of unowned dogs, in sufficiently good body condition to be sustained independently of direct

human oversight, did not exist in these two villages. However, given the implications for rabies control and animal welfare, this study aimed to generate additional evidence relating to the ecology and health of free-roaming dog populations using an alternative approach, specifically community-level participatory exercises.

Community-based participatory methods, termed Participatory Rural Appraisal (PRA), have been used extensively for research purposes by those from outside the community (Chambers, 1994a, 2007) including for veterinary epidemiology (Catley et al., 2012) and rabies control (Okell et al., 2013). These methods facilitate the sharing of local knowledge, and typically involve visualisation tools and ranking or scoring, but may also include group discussion or semi-structured interviews (Chambers, 1994a, 2007; Upjohn et al., 2013). Triangulation, or the comparison of PRA outputs with results generated by gold standard methods evaluating the same variables, is necessary to validate PRA outputs (Catley, 1999; Catley et al., 2012). Historically participatory approaches were developed to address discrepancies between perceived community-level issues determined through conventional surveys and by the community themselves (Catley, 1999). While neither are gold standard methods, PRA outputs have been shown to agree with, and thus verify, key findings from a limited number of conventional surveys designed to assess the same variables (Chambers, 1994b; Upjohn et al., 2013).

From previous studies (Putra et al., 2013), we assume that if a fraction of the free-roaming dog populations in Antiga and Kelusa was indeed unowned and in reasonable body condition, these individuals would comprise <10% of the population. Therefore, we preferred community-based participatory exercises to mark-recapture approaches given that it may be difficult to differentiate a real number of unowned dogs in reasonable body condition from measurement error and statistical variation, which may be large and encompass zero (Matter et al., 2000; Kayali et al., 2003; Totton et al., 2010; Belsare and Gompper, 2013). This may be compounded by violations of mark-recapture model assumptions, such as closed and stable populations. We determined a priori that population size was unlikely to remain constant between marking and recapture through frequent gains and losses of dogs (Morters et al., 2014). Furthermore, the study populations were not closed and were confluent with the other populations in the non-survey areas and neighbouring villages. Free-roaming dogs may travel substantial distances (Garde et al., 2012), therefore owned, unconfined dogs from the neighbouring villages may wander into the research villages.

We used PRA in Kelusa and Antiga, as a novel approach in dog ecology studies, to draw on local knowledge to obtain community-level consensus regarding the food sources of free-roaming dogs according to health and ownership status to infer the existence (or not) of unowned dogs in adequate body condition. Specifically, the PRA aimed to generate additional information about the health and ownership status of free-roaming dogs for triangulation of data from direct observations and household surveys.

Download English Version:

<https://daneshyari.com/en/article/5793586>

Download Persian Version:

<https://daneshyari.com/article/5793586>

[Daneshyari.com](https://daneshyari.com)