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NON-INVASIVE ESTIMATION OF BODY SIZE OF SOUTHERN ELEPHANT SEALS (*MIROUNGA LEONINA*)

Body size is one of the most important phenotypic trait of animals, is related to physiology, ecology and behaviour, and has important implications for conservation of wild species. Direct estimation of body size of large mammals requires physical or chemical restrain of subjects, that presents risks for both subjects and operators. The practical and ethical drawbacks of direct size measurement promoted the development of non-invasive measurement methods, most of which are based on photogrammetry, in which pictures of the animals are taken with a scale in the picture frame. A significant drawback of these methods is that pictures need to be processed to generate measurements. Therefore, they cannot provide a size estimate directly in the field, often requiring a significant amount of time for picture processing. Here, we present a new method based on simple trigonometry by which we estimated body length of female southern elephant seals (*Mirounga leonina*), that are large (weight up to 900 kg) and cannot be handled without sedation. Field work was carried out in 2016 at Sea Lion Island, the main colony of the species in the Falklands. The length of female elephant seals was estimated by applying simple trigonometry to: a) the distance between the measurement apparatus and the tip of the nose of seals; b) the distance between the measurement apparatus and the base of the rear flippers; and c) the angle between the two distances. We used a laser range finder (Leica Disto A8) to measure distances and a digital protractor (Wixey WR410) to measure angles. The range finder was mounted co-axial to the protractor, that was in turn mounted on a tripod. We carried out extensive trials measuring objects of know size, obtaining repeatabilities close to 1 and small measurement errors, independent from operator identity, wind and light conditions. We measured a large sample of elephant seal females in the field (N =134) in different position (on the belly, on the side with straight back, on the side with curved back), we obtained a high repeatability of measurements (> 0.90), and we estimated equations to convert measurements obtained in different positions. All together, the new method based on trigonometry proved a very effective approach to obtain fast and accurate measures of elephant seal females non-invasively and directly in the field. The method is definitely applicable to other pinniped species, and mammals at large, that can approached at short distance.

Comunicazione orale ☐ **Poster** ☒

☐ Simposio **Neural plasticity, comparative data and behavioral outputs**
☐ Simposio **Biodiversity conservation, extinction and sustainable development**
☐ Simposio **Invading pests and emerging diseases**
☐ Simposio **Biology of reproduction and reproductive strategies**
☐ Simposio **Animals as source of food**

☒ Tema libero (solo poster)

Premio UZI **Partecipa** (solo poster) ☒ **Non partecipa** ☐