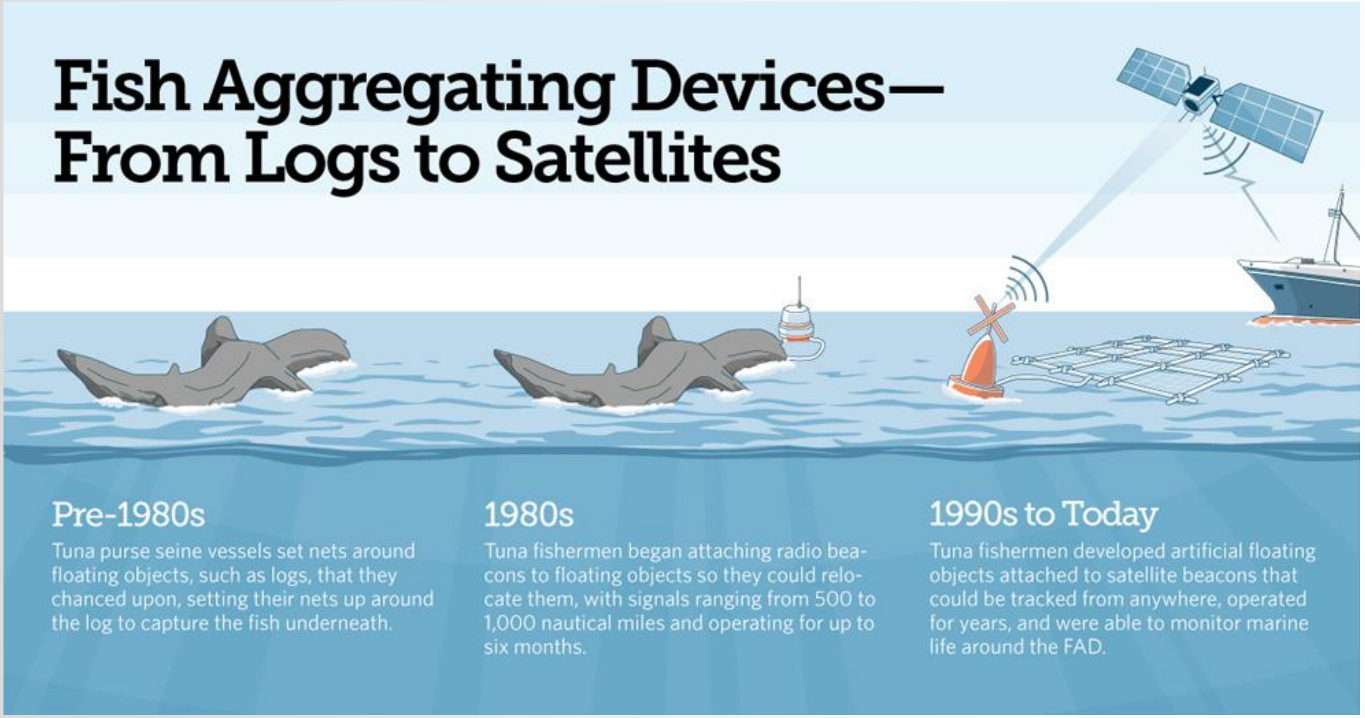
First look at the distribution of deactivated dFADs used by the French Indian Ocean tropical tuna purse-seine fishery

Wencheng Lau-Medrano

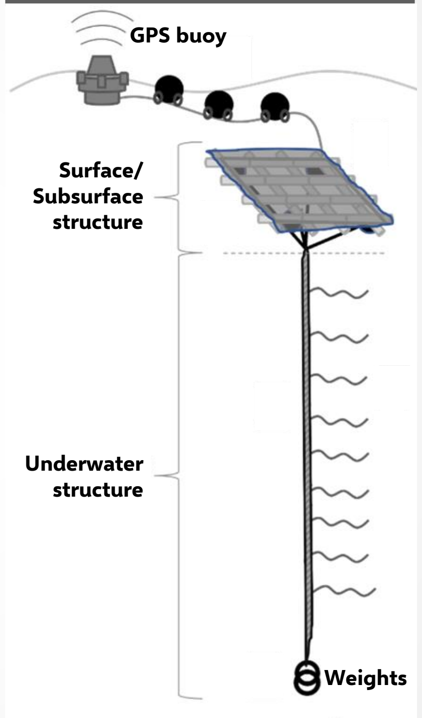
Daniel Gaertner | Francis Marsac | Loreleï Guéry | David M. Kaplan

Introduction



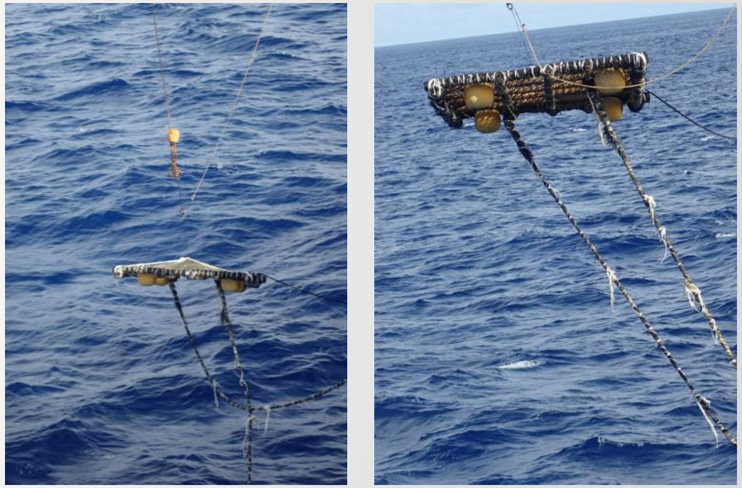
Source: PEW

General dFAD structure and components



Zudaire, et al., 2023

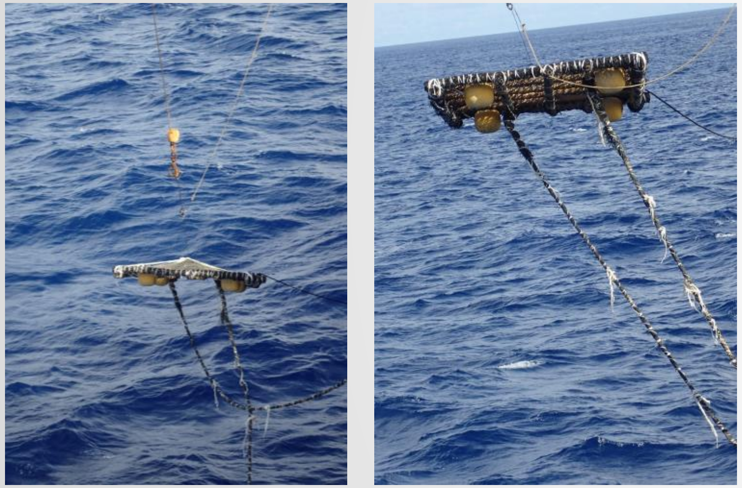
Escalle, et al., 2023



Source: Marc Taquet, FADIO/IRD-Ifremer

Introduction

Escalle, et al., 2023



Source: Marc Taquet, FADIO/IRD-Ifremer

Examples of stranded dFADs in the Pacific ocean

Escalle, et al., 2023

Introduction

Escalle, et al., 2023

Source: Marc Taquet, FADIO/IRD-Ifremer

PACIFIQUE — MARDI 25 FÉVRIER 2020 — 42

Pêche : pourquoi les DCP envahissent les zones côtières

WALLIS-ET-FUTUNA. Les DCP, dispositifs de concentration de poissons, dérivants sont de plus en plus nombreux à s'échouer. Ces objets flottants font l'objet d'une étude sur leur impact environnemental.

Le service des pêches de Wallis-et-Futuna a lancé une vaste campagne de collecte de données concernant les dispositifs de concentration de poissons (DCP) dérivants auprès des pêcheurs et de la population locale.

Ces DCP sont intentionnellement déployés dans l'océan, pour attirer les poissons, qui ont tendance à s'assembler naturellement autour d'objets flottants. Depuis leur mise en place vers la fin des années 90 dans le Pacifique, les DCP dérivants sont devenus un élément clé de la pêche. Environ 40% des prises de thon à la senne dans le Pacifique occidental et central seraient obtenues grâce à ces dispositifs.

NOMBREUX ECHOUAGES

Ils ont permis une augmentation des captures, générant davantage de revenus. Ils ont permis aussi de réduire les coûts, notamment en diminuant les frais de carburant des bateaux. Mais leur utilisation intensive a aussi mis au jour le problème de l'échouage de ces objets sur les plages. « *A Wallis-et-Futuna, cette problématique est apparue avec beaucoup d'intensité en 2019, quand la population a vu la recrudescence de ces objets sur les plages, les récifs, dans le lagon et aussi en pleine mer autour des îles, suscitant de nombreuses questions* », explique Bruno Mugneret du Service de la Pêche et de Gestion des Ressources Marines à Wallis.

Cette campagne a pour objectif de quantifier le nombre de DCP perdus ou échoués, ainsi que leurs impacts sur les zones côtières de Wallis-et-Futuna. Elle vise aussi à sensibiliser les populations à leur rôle de sentinelle.

A l'occasion du lancement de cette campagne, les experts de la Communauté du Pacifique (CPS) sont venus présenter les résultats d'une récente étude menée autour de l'échouage de ces DCP dans le Pacifique occidental et central.

Ainsi de 30 000 à 65 000 DCP sont déployés chaque année dans ce secteur du Pacifique, et au moins 7% d'entre eux finissent sur les côtes. Cet échouage résulte, entre autres, de la force des courants océaniques, mais aussi du choix des zones de déploiement. Ces échouages sont particulièrement importants à Tuvalu, aux îles Salomon, en Papouasie-Nouvelle-Guinée et à Kiribati.

Un DCP trouvé sur un îlot au nord de Wallis-et-Futuna. Photo CPS

Pour les chercheurs de la Communauté du Pacifique, la collecte de ces informations est essentielle pour compléter les bases de données existantes et évaluer les taux réels d'échouage et leurs conséquences sur les écosystèmes côtiers et les pêcheries locales.

A Wallis-et-Futuna, l'utilisation des DCP a créé l'inquiétude chez certains professionnels de la pêche qui ont vu là un pillage des ressources de l'archipel au bénéfice de grosses flottes étrangères.

NOUVELLES TECHNIQUES

Aujourd'hui, le territoire dispose de quatre de ces systèmes : trois à Wallis et un Futuna. Et en août dernier, la Communauté du Pacifique a proposé une formation pratique sur la pêche du large : 18 pêcheurs de l'archipel ont pu découvrir de nouvelles techniques comme la palangre verticale, la traîne à double leurre... Ils disposent désormais d'un éventail de méthodes pour traquer les thons, bonites, mahi mahi et autres poissons en surface et jusqu'à 300 m de profondeur, pour mieux s'adapter aux conditions variables d'environnement et de ressources et exploiter les DCP.

Source : CPS

Introduction

ICES Journal of Marine Science

ICES CIEM International Council for the Exploration of the Sea / Conseil International pour l'Exploration de la Mer

ICES Journal of Marine Science (2021), 78(7), 2432–2447. https://doi.org/10.1093/icesjms/fsab116

Original Article

Quantifying drifting Fish Aggregating Device use by the world's largest tuna fishery

Lauriane Escalle[1,*], Steven R. Hare[1], Tiffany Vidal[1], Maurice Brownjohn[2], Paul Hamer[1], and Graham Pilling[1]

Western and Central Pacific Fisheries Commission

SCIENTIFIC COMMITTEE

SIXTEENTH REGULAR SESSION

Electronic meeting

11-20 August 2020

Estimates of the number of FAD deployments and active FADs per vessel in the WCPO

WCPFC-SC16-2020/MI-IP-13

Lauriane Escalle[1], Tiffany Vidal[1], Steven Hare[1], Paul Hamer[1], Graham Pilling [1] and the PNA Office

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ICES Journal of Marine Science (2017), 74(1), 215–225. doi:10.1093/icesjms/fsw175

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Massive increase in the use of drifting Fish Aggregating Devices (dFADs) by tropical tuna purse seine fisheries in the Atlantic and Indian oceans

Alexandra Maufroy[1], David M. Kaplan[2], Nicolas Bez[1], Alicia Delgado De Molina[3], Hilario Murua[4], Laurent Floch[1] and Emmanuel Chassot[5*]

nature sustainability — ARTICLES

https://doi.org/10.1038/s41893-022-00883-y

Check for updates

Recovery at sea of abandoned, lost or discarded drifting fish aggregating devices

Taha Imzilen[1,2,3], Christophe Lett[1,2], Emmanuel Chassot[4,5], Alexandra Maufroy[6], Michel Goujon[6] and David M. Kaplan[1,2]

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…-2020/MI-IP-13

tain the number of operational buoys below authorized limits. The loss of position information prevents the tracking of dFADs outside fishing grounds and may result in under-estimation and spatial bias in estimates of the risks of stranding and loss[5,39]. A potential

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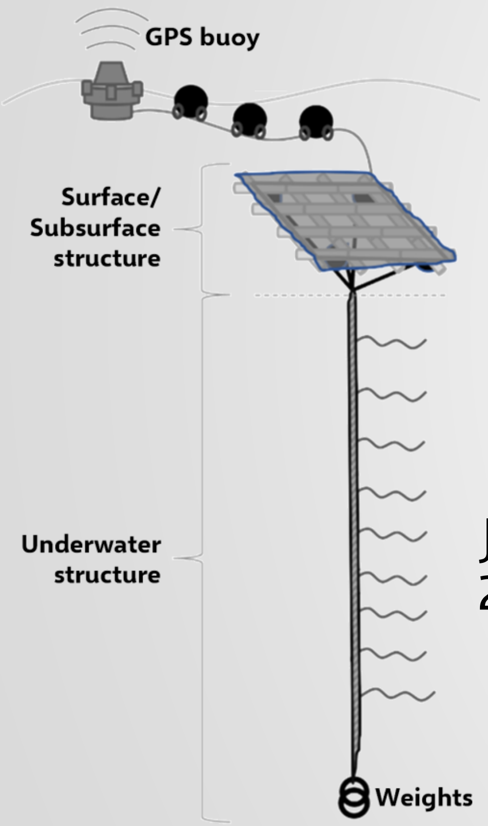
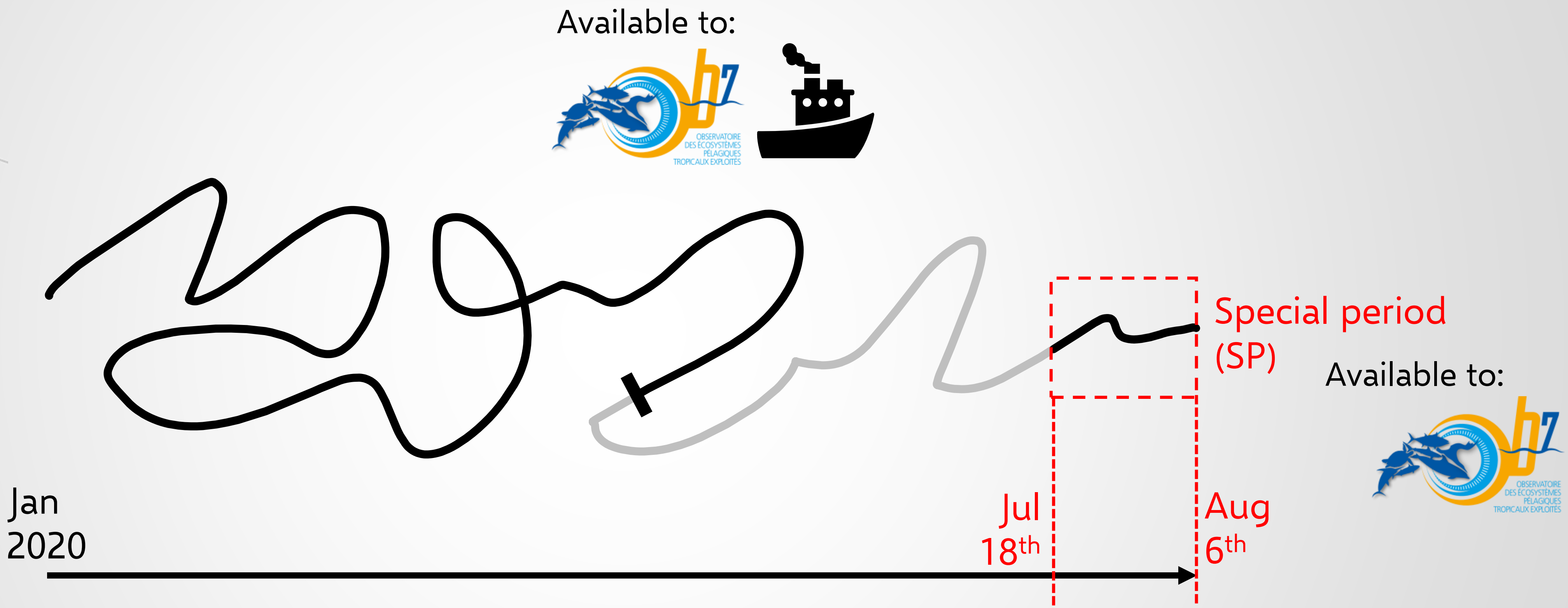
Data and Methods





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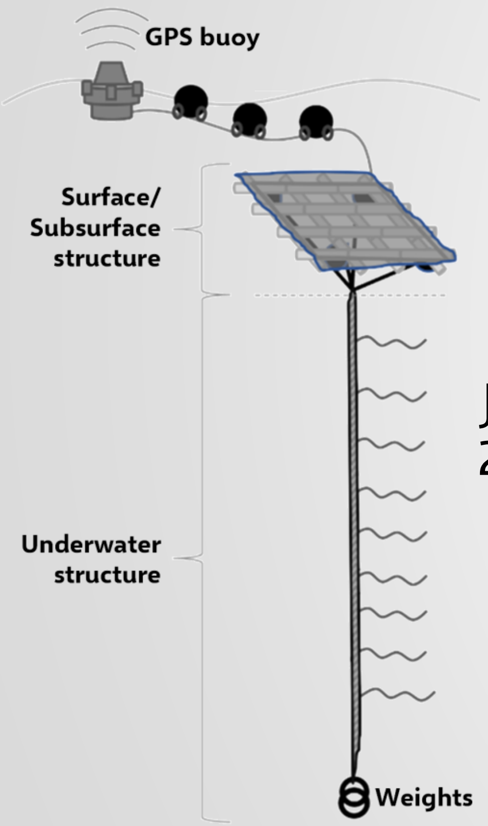
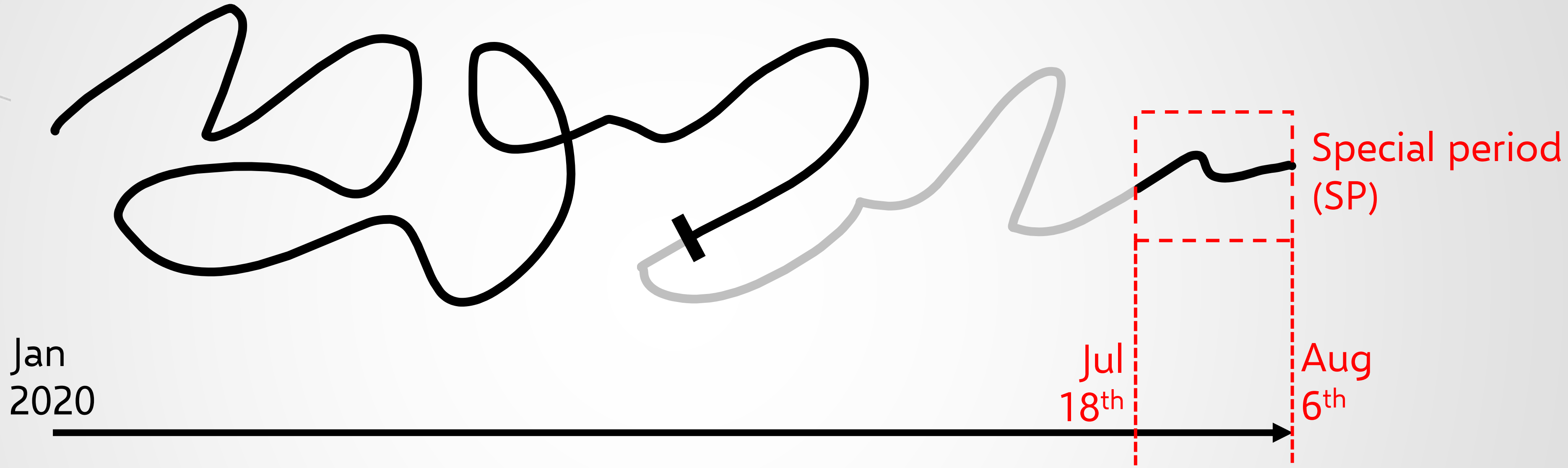




GPS records of buoys + **Strandings estimates** + **SP buoys' GPS records**

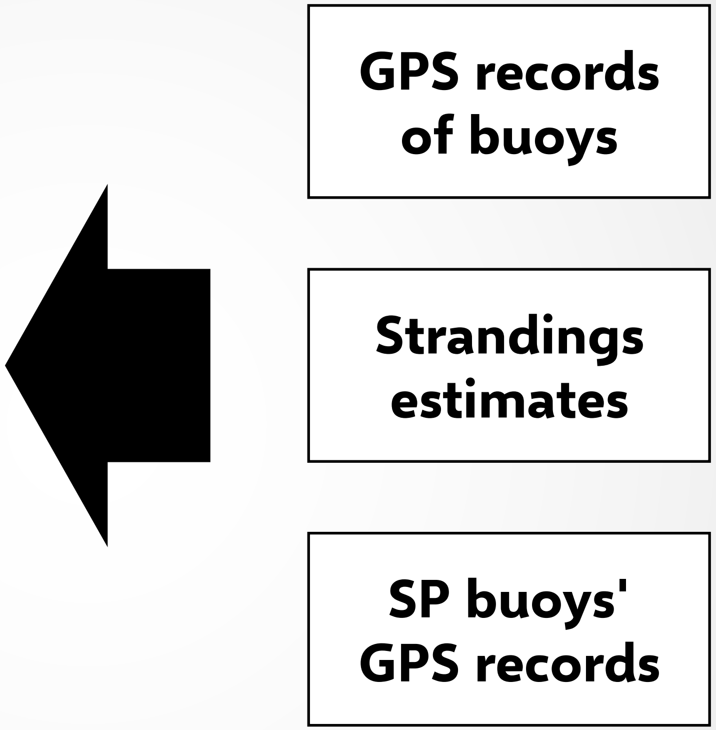
Imzilen et al., 2021

Objectives and Results

1. To assess the numbers of deactivated buoys within the Indian Ocean between January 2020 and the end of the SP (August 6, 2020).

2. To understand the fate of deactivated dFADs and the reasons for their deactivation.

3. To estimate in water dFAD life expectancy after deactivation (i.e., until permanent loss due to sinking, equipment failure or manual deactivation).



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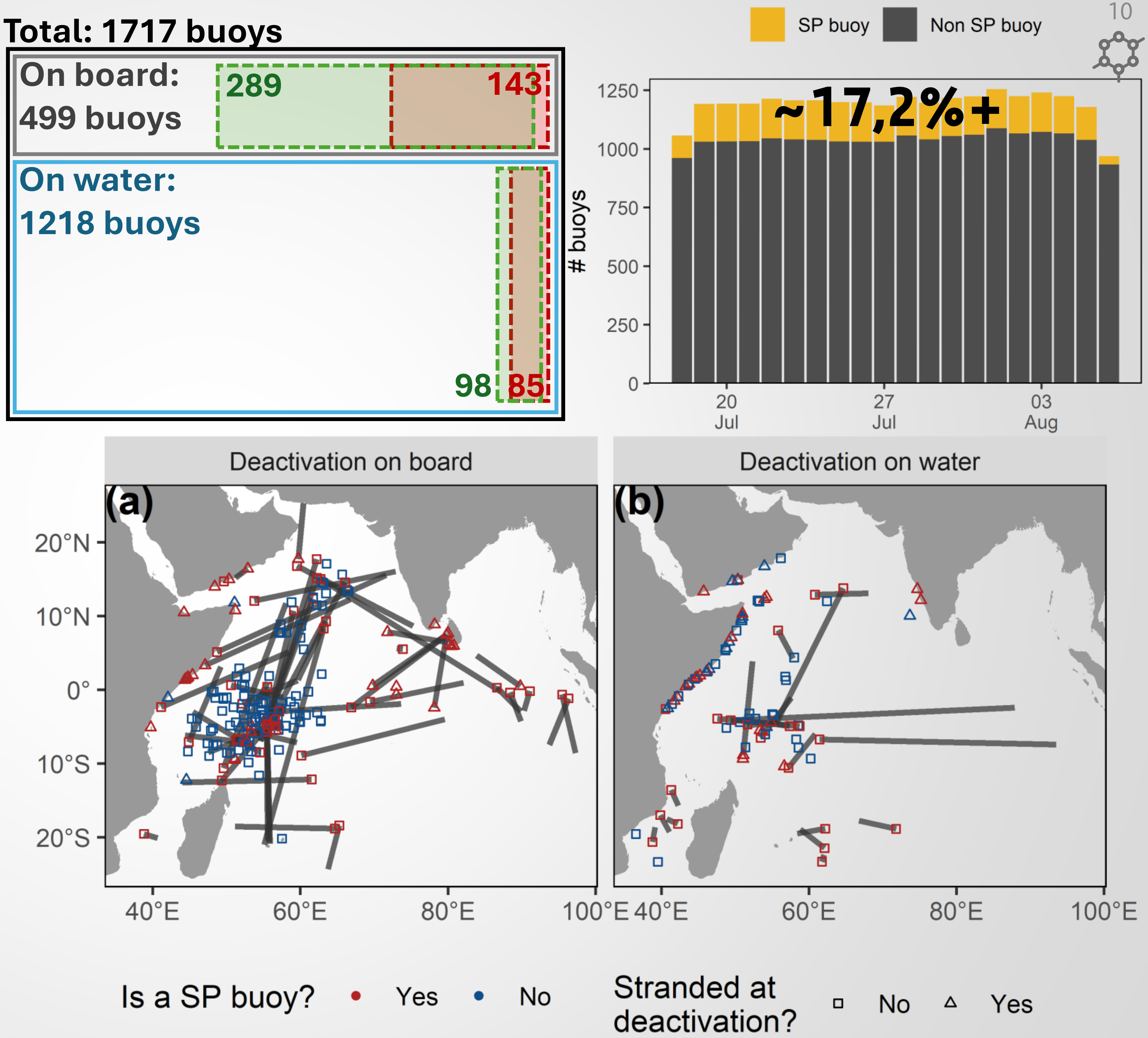

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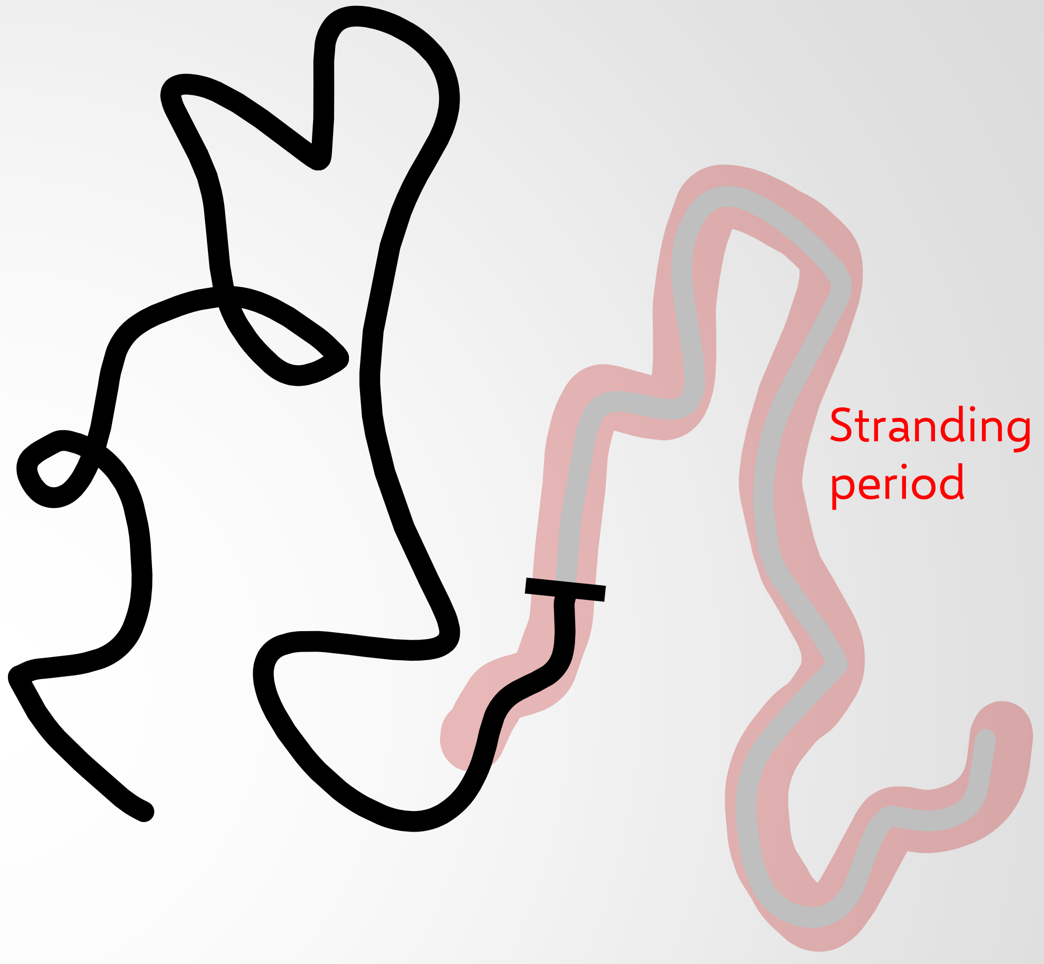

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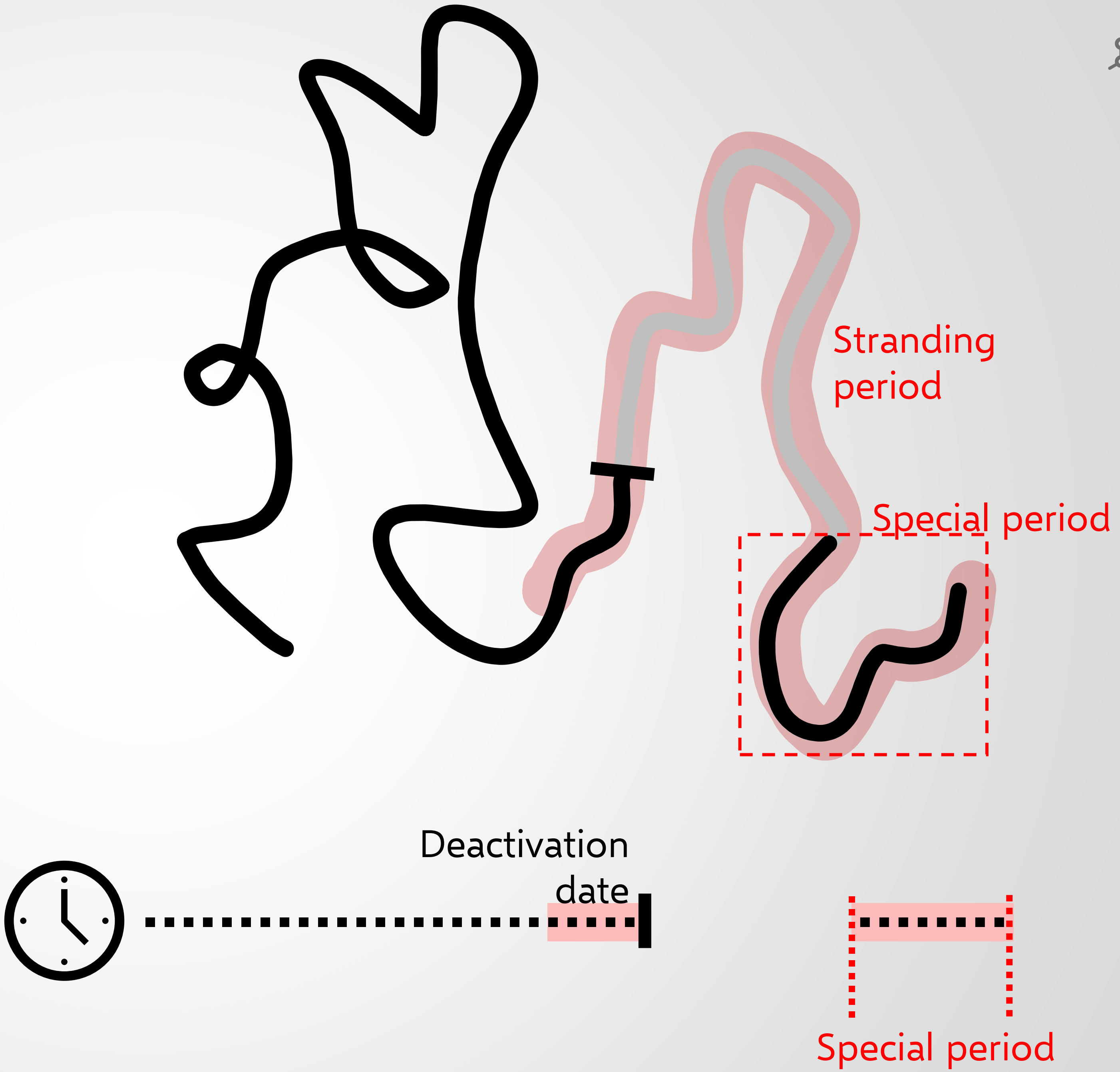

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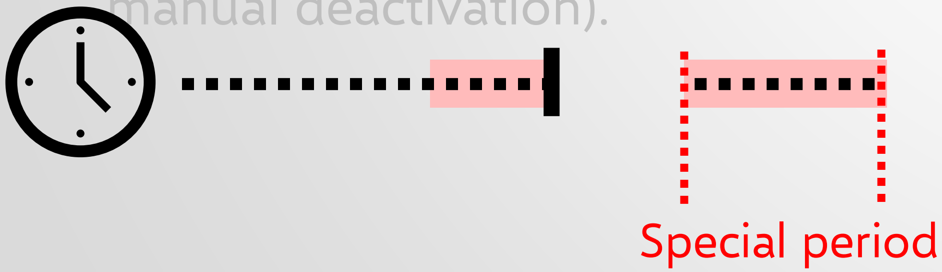

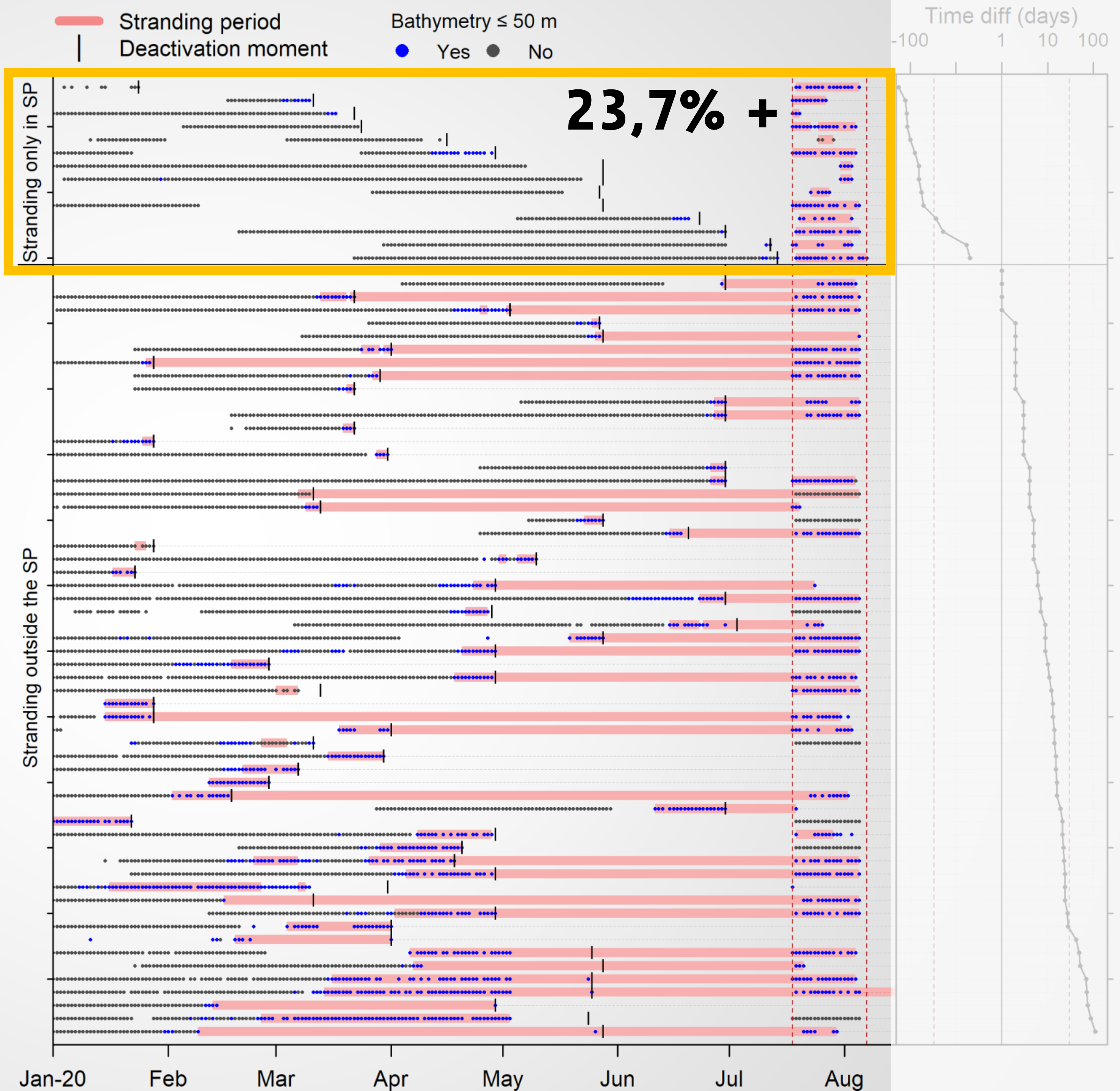

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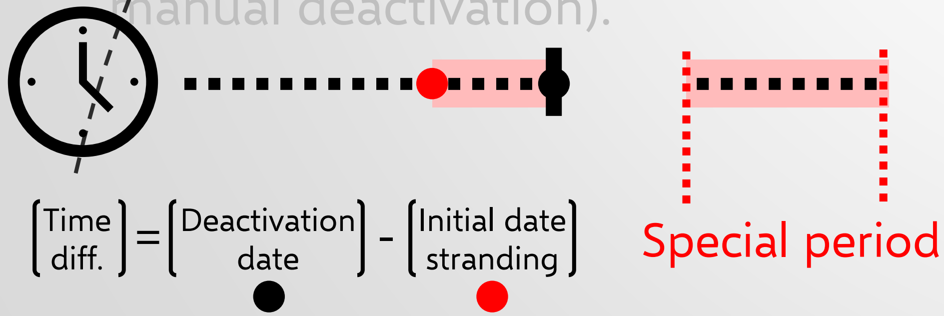

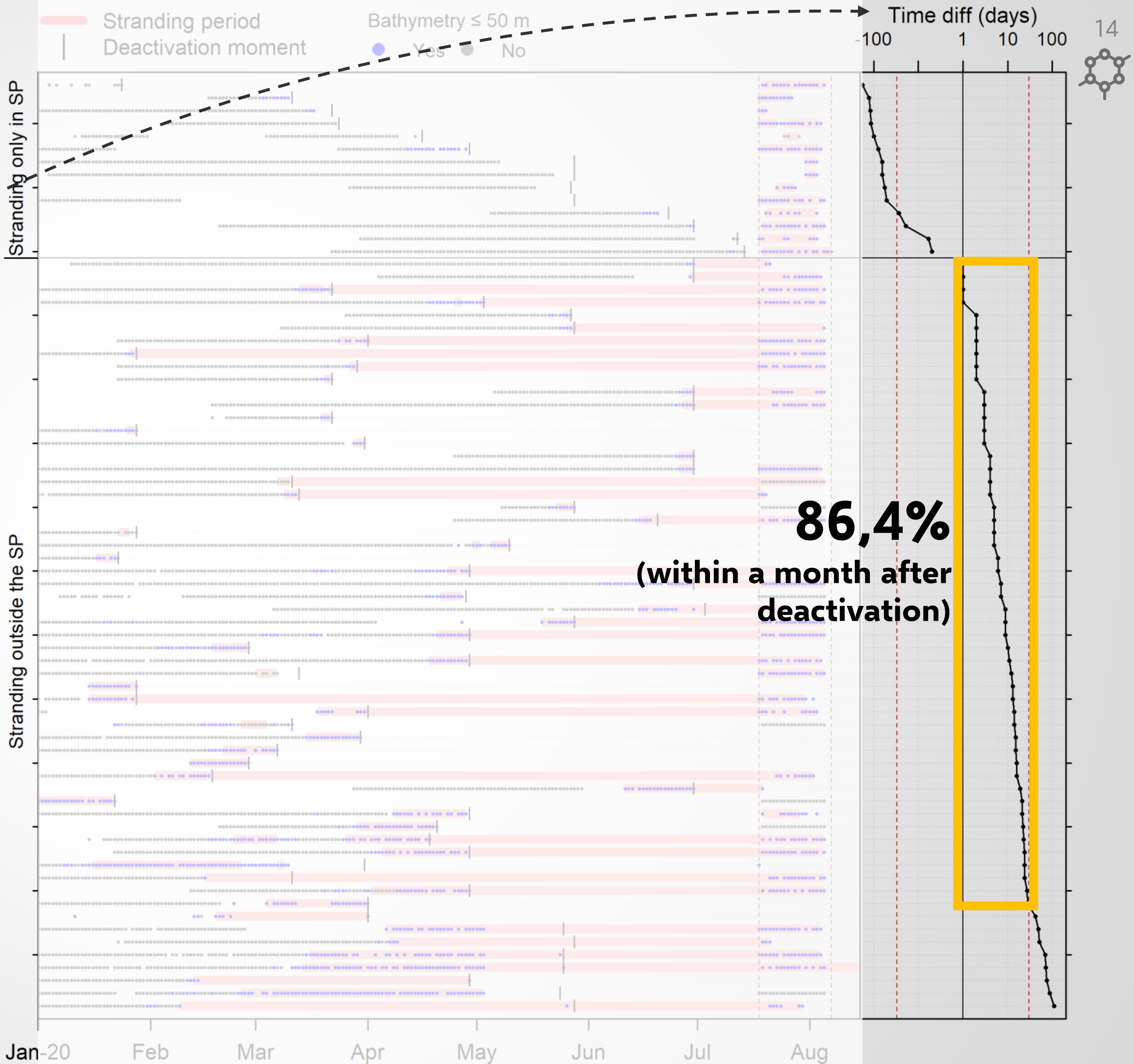

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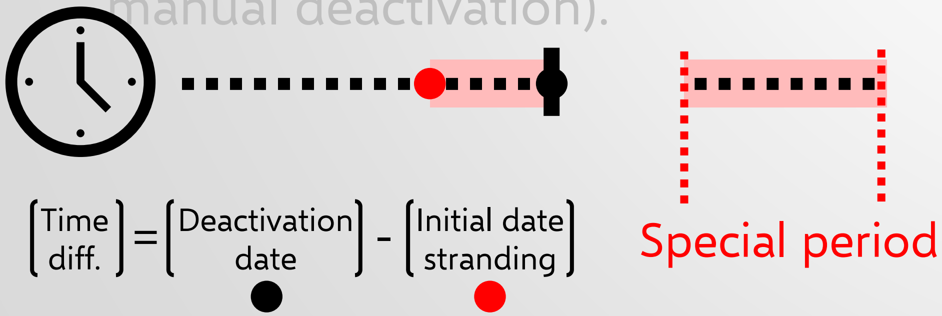

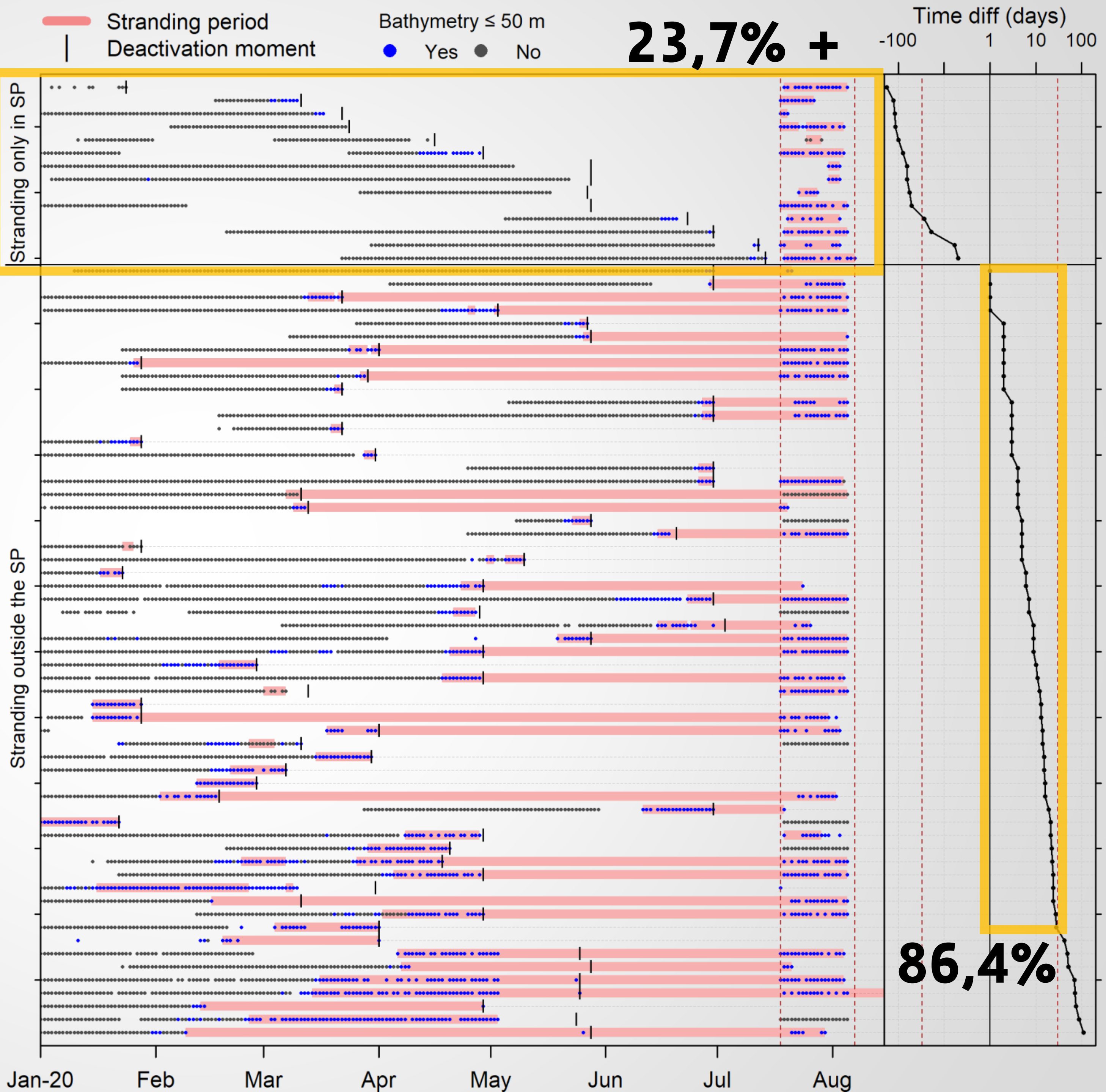

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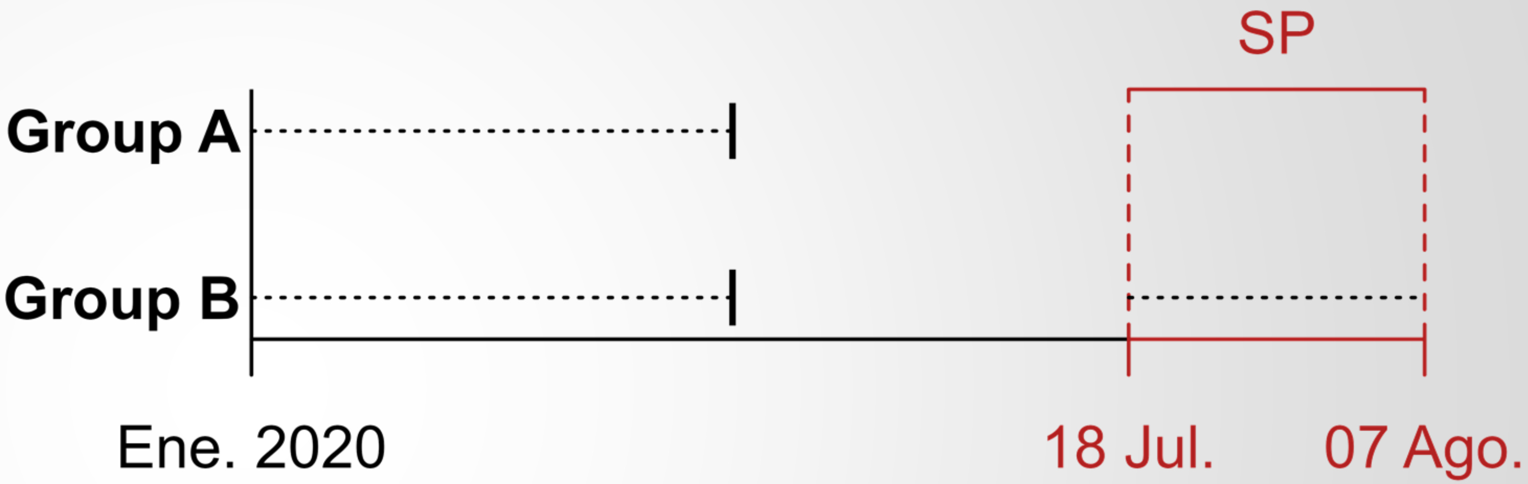

Cormack-Jolly-Seber mark-recapture model

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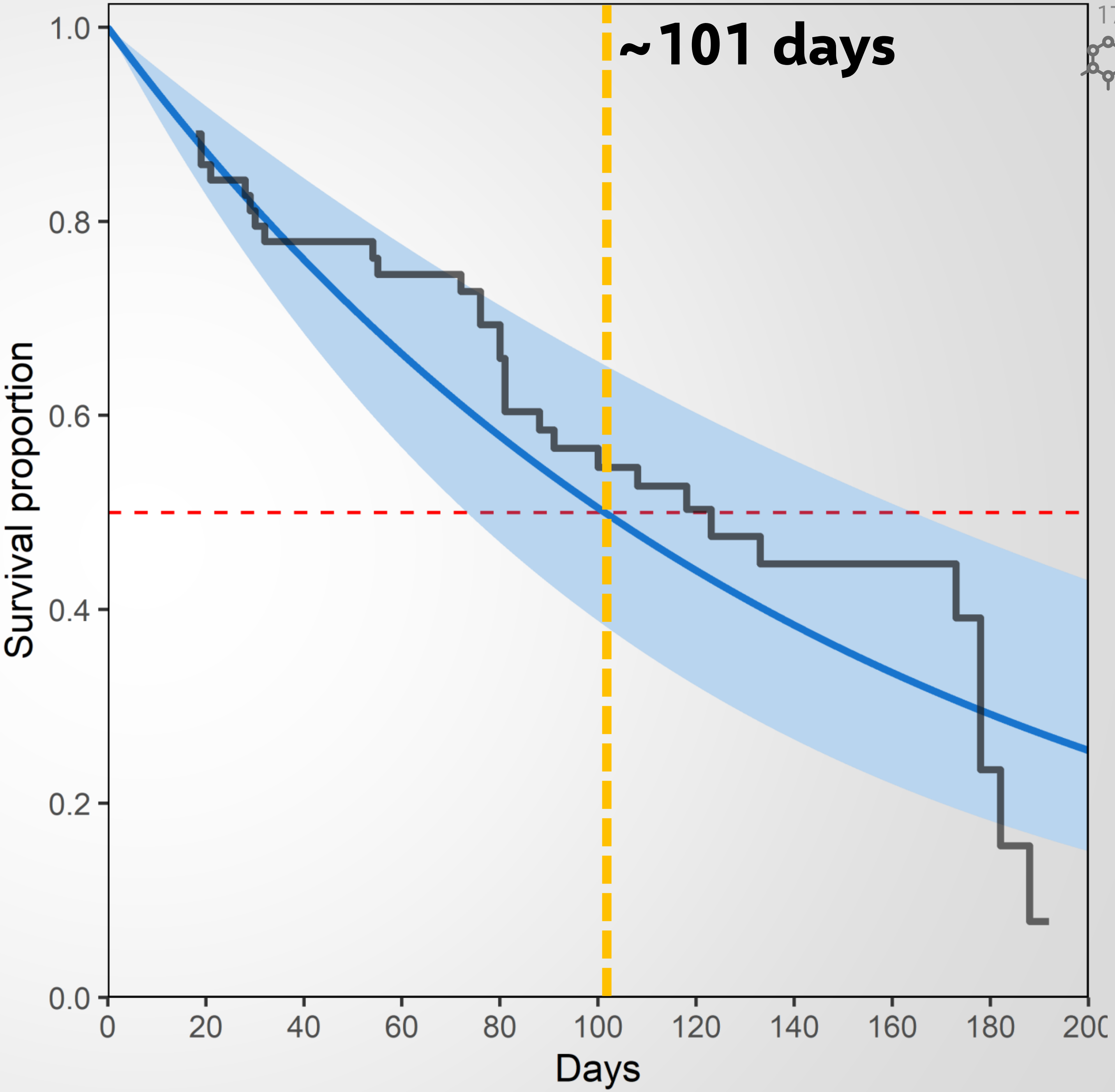

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PLOS | ONE

RESEARCH ARTICLE

Large-Scale Examination of Spatio-Temporal Patterns of Drifting Fish Aggregating Devices (dFADs) from Tropical Tuna Fisheries of the Indian and Atlantic Oceans

Alexandra Maufroy[1]*, Emmanuel Chassot[2], Rocío Joo[1,3], David Michael Kaplan[1,4]

1 Institut de Recherche pour le Développement, UMR MARBEC (CNRS/IRD/Ifremer/UM2), Avenue Jean Monnet, Sète Cédex France, 2 Institut de Recherche pour le Développement, UMR MARBEC (CNRS/IRD/Ifremer/UM2), SFA, Fishing Port, Victoria, Seychelles, 3 IMARPE, Esquina Gamarra y General Valle S/N Chucuito, Callao, Lima, Peru, 4 Virginia Institute of Marine Science, College William and Mary, Gloucester Point, Virginia, United States

* alexandra.maufroy@gmail.com

CrossMark

dFAD time and distance at sea

Predicted "at sea" portions of dFAD trajectories are on average 39.5 days long (standard deviation (SD) of 61.6, standard error (se) of 0.4), corresponding to a mean piecewise-linear drift distance of 1225.8 km (SD 1829.3, se 12.05), with both statistics showing important differences between oceans, years of release and months of recapture (Fig 5). In the Atlantic Ocean, both interannual and seasonal variability in time and distance-traveled at sea are important. Mean time at sea is 47.8 d (SD 69.6, se 0.89) with a minimum predicted time length of 1 hour and a maximum of 825 d (i.e. more than 2 years). Atlantic interannual variation in time at sea is im-

Marine Policy 153 (2023) 105659

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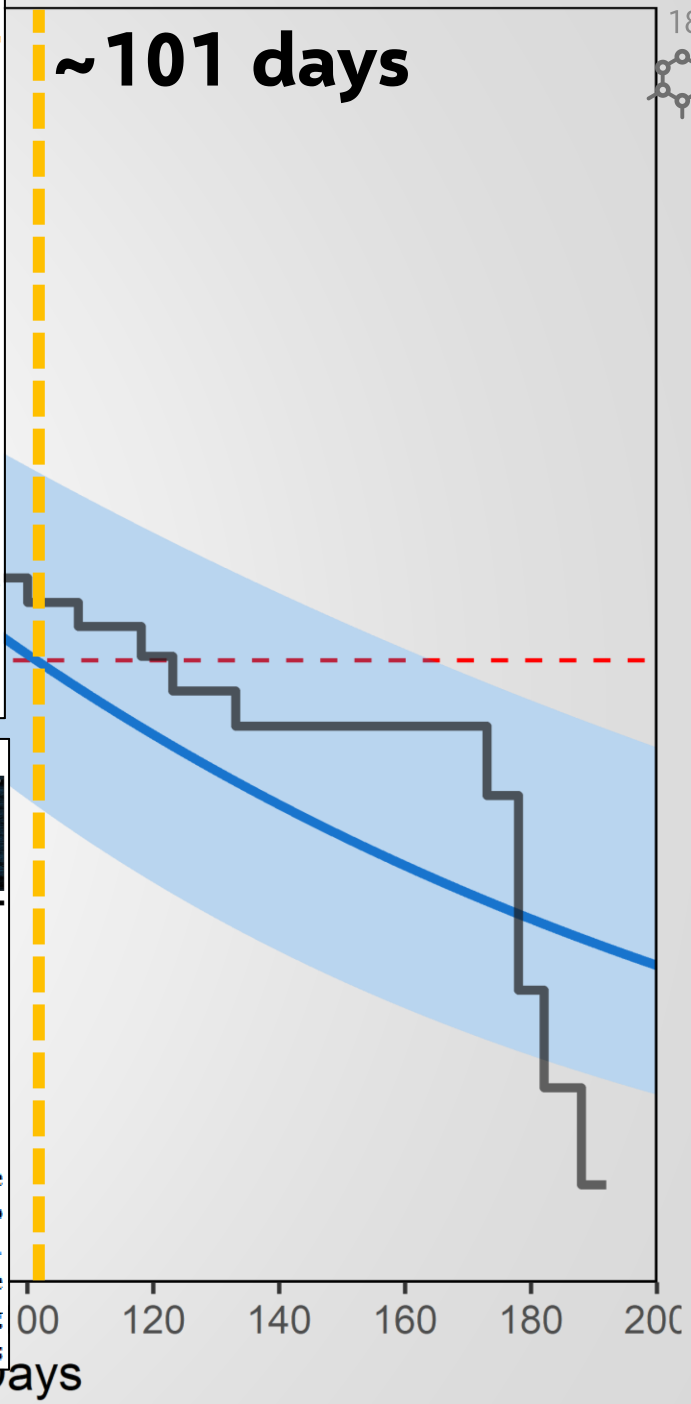
Biodegradable drifting fish aggregating devices: Current status and future prospects

Iker Zudaire[a,*], Gala Moreno[b], Jefferson Murua[a], Paul Hamer[c], Hilario Murua[b], Mariana T. Tolotti[d], Marlon Roman[e], Martin Hall[e], Jon Lopez[e], Maitane Grande[a], Gorka Merino[a], Lauriane Escalle[c], Oihane C. Basurko[a], Manuela Capello[d], Laurent Dagorn[d], Maria Lourdes Ramos[f], Francisco J. Abascal[f], José Carlos Báez[f], Pedro J. Pascual-Alayón[f], Santiago Déniz[f], Josu Santiago[a]

The long lifespan of petroleum-based plastic materials and the large amount of such material used in dFAD construction is contributing to increased negative impacts of dFADs on marine ecosystems [6,8–12]. Depending on the ocean and fleet, fishers consider that their dFADs have a functional lifespan of 6–12 months [2,10], with few dFADs functioning after one year. In fact, dFAD exchange or appropriation among vessels is



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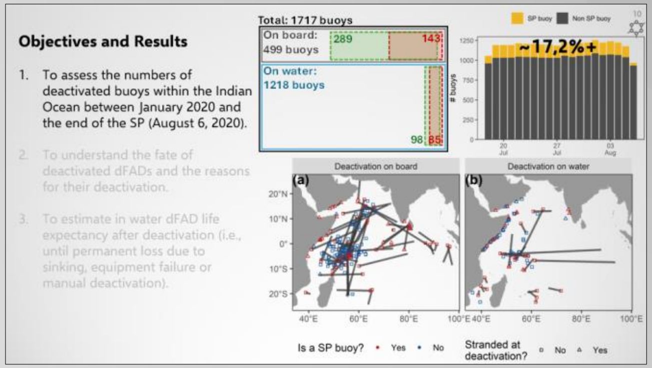
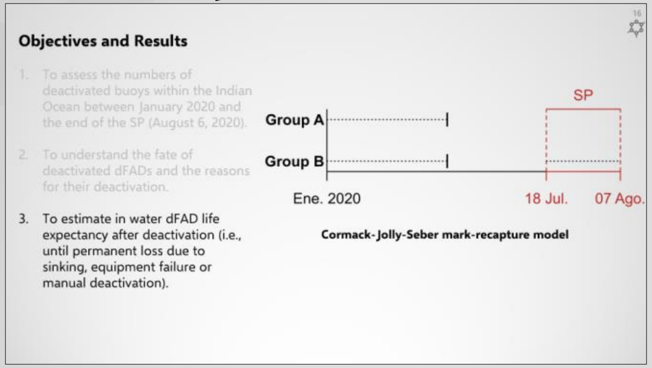
~17,2% more buoys during the SP



23,7% more stranded buoys during the SP

Buoy half-life: ~101 days



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marbec marine biodiversity exploitation & conservation | ob7 Observatoire des écosystèmes pélagiques tropicaux exploités | IRD Institut de Recherche pour le Développement FRANCE | Université de Montpellier | La Région Occitanie Pyrénées - Méditerranée | horizon europe